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ABSTRACT

This report contains eight papers which summarize a two-year research project that examined the income dynamics of poor families. The empirical work is based upon the National Longitudinal Surveys of the Michigan Survey Research Center, a special sample of 3,000 Aid to Families with Dependent Children (AFDC) families conducted by the authors, the 1967 Survey of Economic Opportunity, and the Census Employment Survey. The areas of investigation include the extent to which people move in and out of poverty and the welfare system over time and the relationship between public service jobs and the poverty population. The project examines the characteristics of families which stay in poverty over long periods of time and looks at the factors associated with family transition from dependence on welfare. How transfer policies affect household behavior, the best procedure for evaluating poverty, and the effect of manpower policies on the welfare of disadvantaged households are also covered in the report. (Author/RM)

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THE INCOME DYNAMICS OF THE POOR

PROJECT REPORT

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This project report includes a series of studies related to the experience of poor families. Work reported covers the following general questions: (1) What are the characteristics of families which stay in poverty over long periods of time? (2) What factors are associated with family transition from dependence on welfare? (3) How do transfer policies affect household behavior? (4) What is the best procedure for evaluating poverty? (5) What is the effect of manpower policies on the welfare of disadvantaged households? The empirical work is based on the National Longitudinal Surveys of the Michigan Survey Research Center, a special sample of 3,000 AFDC families conducted by the authors, the 1967 Survey of Economic Opportunity, and the Census Employment Survey.

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THE INCOME DYNAMICS OF THE POOR

FINAL REPORT

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PROJECT SUMMARY

I. INTRODUCTION

This memorandum summarizes our two-year research project, "The Income Dynamics of the Poor," funded under U.S. Department of Labor Research Grant No. 42-06-74-04.

Our original project proposal described three areas of investigation:

- The extent to which people move in and out of the poverty population over time.
- The extent to which people move on and off the welfare system over time.
- The relationship between public service jobs and the poverty population.

We proposed to analyze the first topic through use of the University of Michigan's *Panel Study on Income Dynamics.* We proposed to analyze the second topic through collection and development of a sample of AFDC and AFDC-U case histories from Alameda County, California. We proposed to analyze the third topic through use of the Census Employment Surveys.

Our research is now complete. In fulfillment of our contractual obligations, we include with this summary eight papers. In addition, we announce the public availability of our sample of 3,158 AFDC and AFDC-U cases.

The papers are:

1) "How Big is the American Underclass?" by Frank Levy.

In this paper we use the *Panel Study on Income Dynamics* to measure and explain movements in and out of the poverty population over time. Our main focus is determining the extent to which poverty is a temporary versus a permanent phenomenon.

2) "County Welfare: Caseload Growth and Change in Alameda County," by Michael Wiseman.

In this paper we describe the Alameda County, California, AFDC and AFDC-U programs between 1967 and 1973. Our description includes changes in the size of the caseloads, changes in the demographic characteristics of recipients, and changes in the system's regulations and payments. We also present gross flows onto and off of the case welfare rolls during the period.

3) "Change and Turnover in a Welfare Population," by Michael Wiseman.

In this paper we analyze in detail movements onto and off of the welfare rolls. Our focus is the probability that a family now on welfare will leave welfare in the future and the way that probability depends on personal characteristics and characteristics of the system. We also analyze the influence of system characteristics on the probability that a woman on welfare joins the labor force.

4) "The Alameda County Welfare Sample Graphs, Tables, and Stories," by Michael Wiseman.

This paper contains a compendium of tabulations from our Alameda County Welfare Sample together with short histories of representative cases. The paper is provided to aid the interested reader who has questions about welfare in Alameda County that are not answered in the papers described in (2) and (3) above.

5) "Income Dynamics Project County Welfare Sample: Variable Location and Codebook," by Richard Booth and Michael Wiseman.

This codebook describes the variables collected in the Alameda County Welfare Sample and gives their locations on the data tape. We have provided this codebook in the hope of interesting other researchers in reanalyzing our data.

6) "Education, Earnings, and the Ghetto: Problems in Inference from Geographically Restricted Data," by Michael Wiseman and Frederick Doolittle.

Data sets which are restricted to poverty areas within cities can produce biases in policy evaluation. In this paper some limitations of these data sets for policy evaluation are illustrated. This paper includes a discussion of the circumstances in which these data sets will prove valuable.

7) "On Giving a Job: The Implementation and Allocation of Public Service Employment," by Michael Wiseman.

In this paper we analyze the structural differences between public employment programs designed to combat recession and public employment programs designed to combat poverty. We test the impact of alternative restrictions on job applicants for the antipoverty program using the Census Employment Survey for San Francisco. (This paper has already been published as Paper Number 1 in the series, "Achieving the Goals of the Employment Act of 1946--Thirtieth Anniversary Review," volume 1, published by the Subcommittee on Economic Growth, Joint Economic Committee of the U.S. Congress, August 25, 1975.)

8) "The Time Poor: A New Look at Poverty," by Clair Vickery.

In this paper, we critique the official poverty standard for concentrating on a household's money needs alone. A household consumes goods produced in the market but it also consumes goods produced in the home that require the time of an adult. When a female household head earns an income equal to her household's poverty standard, she is unavailable to work in the home. Correspondingly her family is worse off than a two-parent family in which one parent earns a poverty standard income and the other parent works in the home. We derive alternative poverty standards that correct for this discrepancy. (This paper is forthcoming in the *Journal of Human Resources*.)

Our project has covered a number of different areas. But our main focus has been on turnover within the poverty and welfare populations. These are also the areas in which we have received the most outside requests for information. Correspondingly, we focus our summary on these two topics.

II. A SHORT INTRODUCTION TO TURNOVER

Turnover in the poverty population and turnover in the welfare rolls have certain features in common. Each begins with a state--e.g., "in poverty"--and a certain population--e.g., the poverty population during a particular year. As time passes, people move out of the state. It is our purpose in these studies to find out how fast they move and why they move. These movements, too, share certain characteristics.

- A movement out of a state does not mean a person has left the state forever. People who leave poverty in one year may return in the future. People who leave the welfare rolls in one year may return in the future.
- Correspondingly, it is often convenient to describe individuals by the proportion of time they spend in a state: i.e., a particular individual is poor three years out of five or one year out of ten.[1]
- Different individuals in the population have different ex ante probabilities of changing states. A male-headed household with income just below the poverty line has a better chance of leaving poverty than a female-headed household with no earned income. (Correspondingly, he will probably spend a greater proportion of his time above the poverty line than she will.) Much of the variation in these individual probabilities can be explained by individual characteristics.

III. TURNOVER IN THE POVERTY POPULATION

Our results, reported here, are summarized in the paper "How Big is the American Underclass?"

Our concern in this analysis is not the poverty population per se, but that portion of the poverty population who are involved in current discussions of welfare reform, food stamps, extensions of medicaid, and so on. We define this population to be the official poverty population *excluding* households and individuals eligible for SSI but *including* households that would be below the official poverty standard except for the receipt of AFDC and general assistance payments. We call this group the target population and we define it in the following way:

Definition of the Target Population

> The *pre-welfare poor* are the set of individuals whose money incomes, excluding AFDC and general assistance payments, fall below the official poverty standard.
>
> The *target population* is defined as the pre-welfare poor with the following exclusions: people over 60, and people living in households headed by someone over 60 or someone who is critically disabled.

In 1967, this target population contained 16.35 million people. The composition of the target population is displayed in table 1 which classifies individuals by the race and sex of their household heads.

What happened to this group over time? Data on this question is contained in tables 2 and 3. Table 2 shows the group's distributions of household incomes for the years 1967 to 1973. Note that income, as defined here, excludes AFDC and general assistance payments. By 1968, 31 percent of the group was out of poverty. By 1973, 58 percent of the group was out of poverty and 36 percent had incomes above (1.5)x the poverty standard.

TABLE 1

COMPOSITION OF THE 1967 TARGET POPULATION BY THE CHARACTERISTICS OF THEIR HOUSEHOLD HEAD

Characteristics of Household Head	Number of People (in millions)*
White male	5.02
Nonwhite male	4.70
White female	2.45
Nonwhite female	4.18
TOTAL	16.35

*Proportion who are children under 18 = 63%.

TABLE 2

ANNUAL INCOME DISTRIBUTIONS FOR MEMBERS OF THE 1967 TARGET POPULATION FOR THE YEARS 1967-73

Define Z as the ratio: $\left[\frac{\text{Pre-welfare household income in year } t}{\text{Household poverty standard in year } t}\right]$

	Percentage of Population with:				Totals	Percentage Who Have Been Out of Poverty at Lease One Year
	$Z \leq .5$	$.5 < Z \leq 1.0$	$1.0 < Z \leq 1.5$	$1.5 < Z$		
1967	45	55	--	--	100	--
1968	34	35	19	12	100	31
1969	31	31	23	15	100	46
1970	30	27	20	23	100	57
1971	30	26	20	24	100	64
1972	23	24	21	32	100	69
1973	18	24	22	36	100	75

SOURCE: *Panel Study on Income Dynamics.*

Table 3 shows this progress was not continuous for all individuals. Once out of poverty, many individuals still had significant probabilities of returning to poverty at some time in the future. Note that the probabilities of entering and leaving poverty were influenced in part by the national unemployment rate.

TABLE 3

RATES OF LEAVING AND REENTERING POVERTY
FOR THE 1967 TARGET POPULATION

Year	Average Probability of Leaving Poverty	Average Probability of Reentering Poverty	National Unemployment Rate (Percent)
1967			3.8
	.31	-	
1968			3.6
	.22	.17	
1969			3.5
	.23	.26	
1970			4.9
	.22	.28	
1971			5.9
	.26	.14	
1972			5.6
	.30	.16	
1973			4.9

SOURCE: *Panel Study on Income Dynamics.*

Who leaves poverty? Our analysis suggests that the families most likely to leave poverty are relatively small, white, and male-headed. Other kinds of families leave, but at slower rates. Within a given year, relatively few people leave poverty through the formation of new households (e.g., a female head who remarries or a young adult who forms a new household).

How do people leave poverty? Among male-headed household, the principal vehicle is a change in wages, perhaps linked to a change in job. Most male household heads in the target population work, and they work close to full time. They are poor because they have large families and they work for low wages. Their wages are low relative to national averages, but they are also low relative to the wage that one would estimate for these heads based on their demographic characteristics. This difference between actual and estimated wages suggests at least some individuals are in poverty due to "bad luck."[2] In fact, this bad-luck hypothesis seems to be correct, since those male heads who leave poverty do so through a modest increase in hours worked and a substantial increase in wages.

Female heads who leave poverty do so through a combination of wage and hours increases (for nonwhites) and wage, hours, and unearned income increases (for whites). In general, female-headed families leave poverty at a much slower rate than males.

It is tempting to view the statistics in table 2 as simple upward mobility. A more accurate view can be constructed using Milton Friedman's theory of permanent income. Under this theory, each household has some long-run average, or permanent, income. Current income in a particular year is related to permanent income through the following equation:

1) $$\ln(Y_t) = \ln(Y^P) + u_t ,$$

where: ln is the natural log function,

Y_t equals actual dollar income in year t,

Y^P equals permanent income, and

u_t is a stochastic error term with a normal distribution.

As suggested by equation (1), a household's annual income fluctuates around its permanent income. Thus, households move back and forth across the poverty line all the time, and the official annual poverty count is a kind of snapshot which freezes this action in a given year. With these fluctuations in mind, it is reasonable to suspect that the poverty count includes households with a variety of individual circumstances:

- some people with very high permanent incomes who are normally not in poverty but who have had a particularly bad year
- some people with moderately high permanent incomes who are in poverty with some frequency (e.g., three years out of every seven) and who have had a moderately bad year
- some people with very low (subpoverty) permanent incomes who have had anything other than an exceptionally good year.

In this context, what appears in table 2 to be upward mobility is just a household returning to its permanent income after a bad year (or, in some cases, a normally poor household having a particularly good year).

We develop these ideas more fully in the "Underclass" paper and arrive at the following conclusions:

- Suppose we define the "permanent poor" or "underclass" as individuals who were pre-welfare poor at least five out of the seven years between 1967 and 1973. The data show that 8.6 million people fit this definition. Thus, the permanently poor population is about one-half the size of the poverty population in any single year.[3]

- On the other hand, about one-fourth to one-fifth of the poverty population in any single year are "poor by mistake," in the sense that they were out of poverty at least five out of the seven years between 1967-1973.
- The remainder of the poverty population in any single year fluctuates around the poverty line in a stable fashion.
- Movements above and below the poverty line and, what is the same thing, the proportion of time a household spends out of poverty, can be predicted fairly well, using a simple permanent income model, which we estimate in the paper.

The composition of this underclass is contained in table 4, where individuals are classified by the race and sex of the 1967 household head. Note that, as of 1967, three-fourths of the group were children under 18.

TABLE 4

AN ESTIMATE OF THE SIZE OF THE UNDERCLASS
IN THE MEDIUM RUN
(All Numbers Refer to Millions of Individuals)

Characteristics of 1967 Household Head	Members of the U.S. Population Who Spent Two or Less Years out of Poverty, 1967-73[a]
White male	1.78 (1.20)[b]
Nonwhite male	2.54 (1.86)
White female	1.08 (.75)
Nonwhite female	3.16 (2.44)
Total	8.56 (6.25)

[a] The following were excluded from the population: individuals who were more than 60 in 1967, individuals whose 1967 household heads were more than 60 or were critically disabled, and individuals who died between 1967 and 1973.

[b] Figures in parentheses refer to the number of children under 18 within each group.

Mean number of years out of poverty for individuals = .81 years.

Two other findings in the paper deserve mention. First, the limited data available from the *Panel Study* indicate that the children of poor families do much better than their parents. Between 1967 and 1973, a number of children in the target population left their parents' households to form new households of their own. On average, 80 percent of these new households were well above the poverty line. The one exception to this trend was that the new households formed by nonwhite young women were 60 percent below or just above the poverty line.

Our paper on the underclass concludes with estimates of the impact of AFDC payments on the labor supply of female-headed households. The data base consists of information from the *Panel Study* and is therefore quite crude in comparison with our Alameda County Welfare Sample. Nonetheless, we find relatively stable supply elasticities in the neighborhood of .4 - .6. That is, a 1 percent increase in AFDC payments will decrease a female household head's labor supply by four- to six-tenths of a percent.

In conclusion, we have found that the extensive writing on a "culture of poverty" is overdrawn in several respects. First, permanent poverty is a serious problem, but the permanent poor comprise only about one-half of the poverty population in any single year. Second, many of the poor--especially those in male-headed households--work significant numbers of hours, and their year-to-year changes in income are governed by the same kinds of permanent income models that govern income fluctuations in the rest of the society. Finally, the limited information available indicates that the children of poor households generally do not form poor households themselves.

IV. THE ALAMEDA COUNTY WELFARE SAMPLE: AN OVERVIEW OF PROJECT DESIGN AND RESULTS

This section summarizes the design of the Alameda County Welfare Sample and the results of research based on this new data source. Some of this research was funded by the Manpower Administration of the U.S. Department of Labor, and some of the analysis of the data has been supported by the California State Department of Benefit Payments. Extensive references are provided below to the seven papers currently in circulation, which are based all or in part on these data. A complete list is provided in the bibliography. The references provide the "follow up" for results that can only be briefly described here.

The ACWS is a combined cross-section, longitudinal study of recipients in the Aid to Families with Dependent Children (AFDC) program in Alameda County, California.[4] The sample covers recipients of payments in the program in each of the years 1967-1972, with some overlap into 1973. This period is of particular interest because it spans the welfare "explosion" in Alameda County, it covers the point of introduction and liberalization of work-incentive provisions in benefit calculation, and it includes observations on recipients both before and after introduction of the administration and benefit changes brought about in 1971 by the California Welfare Reform Program (CWRP), the so-called Reagan Welfare Reforms.[5]

The sample was designed both to provide information on the changing composition of the AFDC caseload over time (cross-section data) and information on movements to and from dependence under various administrative procedures and economic conditions (longitudinal data). Below, we describe the sample design that produced information of both types, the results of comparative cross-section analysis, and the results of longitudinal analysis of changes in well-being among dependent families in the sample. The paper is concluded with a summary assessment of the project's accomplishements and implications.

The Sample Design

The project began with selection of a random sample of recipient names from Alameda County's AFDC recipient register for each of the six years covered by the survey. The size of the sample for each year was selected to assure that reliable inferences could be made about the composition of the entire caseload based on the sample. The sample was stratified to assure equal precision of inferences about the AFDC-FG and AFDC-U programs. The "observations" were distributed by month over the sample year to conform to the pattern of seasonal variation in the caseload. Confidentiality of the materials in the files was maintained by special coding and data-transfer procedures.

Once a case was selected for the sample, the file was retrieved and information was collected on (1) family members and grant size as of the sample date, (2) the status of the case and people in the family at quarterly intervals for the year following the sample month, and (3) total time ever recorded in Alameda County on public assistance by the mother in the case. The first type of data provides the basis of the cross-section analysis, and the second type provides the longitudinal results. The unusual feature of the sample is that both retrospective and prospective data are available; we know what happened to recipients before *and* after they were "sampled."

Once collected, the data were extensively edited and checked for internal consistency. Separate data files were created for the sample of families from the U and FG rolls. Codebooks and the data (on magnetic tape) are now available to interested researchers. The final sample size was 1,708 FG households and 1,450 U households.[6]

The basic deficiency of these data is that they are not collected from interviews with the recipients themselves. However, during the period covered by the sample, Alameda County maintained extensive records on recipients. As our sample case narratives reveal,[7] the sample provided much information, far more than was our a priori expectation.

The Cross-Section Results

Demographics

Between January of 1967 and December of 1973 the AFDC caseload of Alameda County doubled. The project results indicate that this expansion was largely a matter of extension of welfare to families who had previously failed to "take up" assistance. Once this process was over, the caseload ceased to grow. Most of this growth was accomplished by early 1971. Several reasons have been advanced for the slowdown that occurred at this time. Our research indicates that:

> *The principal factor in the termination of the welfare caseload was exhaustion of the pool of welfare eligibles. By 1971, virtually everyone who could be on was on.*[8]

To illustrate, Cynthia Rence and Michael Wiseman have estimated that there were approximately 20,500 AFDC-FG eligible units in Alameda County in March 1970. About 18,000 comparable families were on the rolls at that time. By March of the following year, the caseload exceeded 22,000.[9] Not surprisingly, caseload growth came to a halt. As indicated below, administrative changes had something to do with this, but "caseload exhaustion" was the predominant factor.[10]

The cross-section data also provide a picture of new additions to the rolls as the caseload expanded:

> *The welfare explosion in Alameda County was associated with movement onto the rolls of families that tended to be younger, smaller, and more likely to be white than was true of the preexplosion caseload. Both mothers and fathers in the new caseload tended to be better educated than was true for the old.*[11]

Our results cast doubt on the hypothesis that the explosion was primarily a "buying off" of militant blacks.[12] While the welfare rights organizations were active in case recruitment in Alameda County, especially in 1970, the new cases were more frequently headed by whites than blacks. The youth, education, and small-family-size characteristics of these new cases are all associated with greater potential for leaving dependence through labor-force entry. On average, the adults in the welfare population after 1970 seemed better equipped to enter the labor market than were the adult recipients before that time.

The design of the sample permitted use of sampled households to calculate an estimate of the number of families receiving assistance during each calendar year. This number, of course, proved to be larger than the average monthly caseload, but not significantly. Our research indicates that:

> *The total number of families receiving assistance under the [illegible]C program during the year is no more than 30 percent larger than the average monthly caseload. Turnover in the AFDC-U program, however, is considerably greater than that in AFDC-FG.*[13]

Perhaps the most dramatic result of the cross-section analysis concerns the extensive interaction between the U and FG caseloads. Contrary to our impression when the research began, the populations served by the two programs overlap extensively:

> *In Alameda County, a mother in an AFDC-U case has about an even chance of being in an AFDC-FG case at some time during her tenure on welfare. Most of these interprogram movements come about as the result of desertion.*[14]

Administrative Factors

The formal regulations for treatment of earnings in grant calculations were changed three times during the period covered by the sample--first, with the introduction of the so-called $30 and 1/3 earnings disregards in July 1968; second, with the liberalization of the disregards in February 1970; and, finally, with the tightening of earnings disregard by the CWRP in October 1971. By analysis of recipient budgets, we were able to gauge the extent to which legislated liberalization of work incentives was offset by administrative action at the local level. Our results are clear:

> *Alameda County, following state regulations, partially offset each increase in work incentives in formal grant*

> *calculation by reduction in allowed work expenses. Treatment of work expenses was most generous in the period before introduction of the earnings disregards.*[15]

Paradoxically, treatment of work expenses was constrained in 1971 by an injunction brought about by a nominally prorecipient organization, the California Welfare Rights Organization.[16] We find considerable inequity in work-expense treatment in welfare. Our results add support to those who argue for a flat work-expense allowance for benefit calculation.

The Longitudinal Results

Effect of Alteration of Work Incentives

The approach adopted for analysis of effect on recipients of variation in work-incentive provisions specified for payment computation was different from that used, for example, in analysis of results of the negative tax experiment conducted by the Poverty Institute in New Jersey. We concentrated on the effect of work-incentive variation on the likelihood that families would move out of dependence, out of poverty, and that adult recipients would take jobs. Our results show that:

> *The progressive increase in the generosity of the work incentive provisions of AFDC benefit calculation:*
>
> *(a) had no effect on the likelihood that recipients would leave poverty,*
>
> *(b) reduced the likelihood that welfare cases would close over any specified period of time, and*
>
> *(c) had no effect on the likelihood of job taking by recipients initially without employment.*[17]

Conversely, the tightening of average welfare tax rates that occurred in California with implementation of the CWRA increased the likelihood of case termination but had no significant effect on the likelihood of job taking.

We do not take these results to mean that work incentives should be dropped from AFDC payments calculation (recall our cross-section results indicate that they have been there in one form or another all along). They do suggest that little can be obtained from marginal manipulation of them in the future. The work incentives potentially create an important horizontal inequity in AFDC by allowing some families to retain welfare benefits while achieving earnings in excess of levels which would permit eligibility to be attained on initial application. Our results indicate that (a) in Alameda County the number of families on this status is small, and (b) the likelihood of families with substantial earnings remaining on public assistance is low.[18] The "$30 and 1/3" disregard tends to be exploited, in other words, as a transitional device. Our data indicate that the number of eligibles in Alameda County would increase by as much as 50 percent should the earnings disregard be applied on application to welfare.

We conclude that a better approach to the disregard would be to limit its range by standardizing work expenses and perhaps to require that recipient eligibility be reevaluated without it on an annual basis to prevent development of a class of high-income recipients.

Effect of the Hours Rule in AFDC-U

To become eligible for AFDC-U, a family with two able-bodied parents must report that either the father or mother (usually the father) is involuntarily employed less than 100 hours per month. This "hours" restriction was reduced at several times over the period covered by our sample; in 1967 the rule was less than 172 hours.

This rule is perhaps one of the most pernicious in welfare administration. In Alameda County:

> *Tightening of the unemployment definition for U eligibility has reduced both the likelihood that unemployed parents will take jobs and, in consequence, the likelihood that families on welfare will leave dependence.*[19]

The problem is that the "hours rule" is not adjusted for family size or need. As a result, workers with large families would frequently suffer dramatic income reductions if employment at normal wages is accepted.

> *Our research indicates that, despite the presence of another parent in the home, the likelihood that AFDC-U fathers will take jobs is inversely related to the size of their families and, given size, to the number of young children in the family. We believe these results are explained by the arbitrariness of the hours rule and the possibility that welfare-associated medical benefits are of greatest value to families with small children.*[20]

We conclude that the first items on the agenda for welfare reform are (a) extension of AFDC to all families with children, regardless of composition; and (b) provision of medical assistance, perhaps with income-related copayment, to all low-income families regardless of welfare status. We are aware of the accounting problems that are caused by the variable incomes of two-parent families. But, surely, thought devoted to this matter can provide a solution more humane than the hours rule. Our research provides some evidence that desertion is positively associated with improvement in economic conditions.[21] We take this to indicate that some fathers are leaving their families to accept jobs which alone would not provide earnings comparable to what is available on welfare.

Employment-Related Welfare Services and Dependence

In connection with collection of data on recipients, we developed records of the number and type of employment-related services that members of each family had received from the welfare department. Although analysis of these data is not yet complete, preliminary results are significant.

> *We find a statistically significant effect of service completion on the likelihood that mothers in AFDC-FG will take jobs and, in turn, that these mothers will leave dependence. The results for AFDC-U are similar although statistically weaker.*[22]

The dependence effect of welfare service receipt seems to operate in two steps. In the first, the completion of a period of training or job preparation significantly increases the likelihood that a recipient will take a job. In the second, current employment substantially enhances the probability that her case will close. The same pattern appears for AFDC-U.

> *Our results on service impact on dependence directly contradict the results of an earlier study by the General Accounting Office on the same program and verify our published speculation about what would happen if service evaluation were carried out in a more scientifically appropriate manner.*[23]

Summary

The Alameda County Welfare Sample provides important information on a wide range of concerns in poverty policy. Given the modest cost of the project, the results compare favorably with other large-scale efforts at developing data on low-income households. Perhaps the most important lesson to be learned is that much can be discovered about recipients from a careful survey of recipient records in welfare departments which keep them accurately. If Alameda County is like other AFDC administrative units in this regard, we believe this experiment could profitably be repeated. If it is not, then steps should be taken to insure that comparable standards be established elsewhere.

BIBLIOGRAPHY AND FOOTNOTES

The references in the footnotes are to the following papers. Research support for papers marked with an asterisk was provided by the California State Department of Benefit Payments under Demonstration Project Grant 422. Support for the remainder of the work was provided by the U.S. Department of Labor under Research Grant No. 42-06-74-04. Since grantees conducting research and development projects under government sponsorship are encouraged to express their own judgment freely, these results and conclusions do not necessarily represent the official opinion or policy of the U.S. Department of Labor or the California Department of Benefit Payments.

This research was planned and conducted with emphasis on use for public policy. The author would appreciate notification of citation of these results elsewhere. Comments, criticisms, and suggestions for improvement will be enthusiastically received.

Bibliography

Booth, Richard, and Wiseman, Michael. *Alameda County Welfare Sample Codebook*. Berkeley: Institute of Business and Economic Research, University of California, 1976. (Cited as *Codebook*.)

*Doolittle, Frederick, and Wiseman, Michael. "The California Welfare Reform Act: A Litigation History." Department of Economics Working Paper No. 71. Berkeley: University of California, August 1976. (Cited as "Litigation.")

Levy, Frank. "How Big Is the American Underclass?" Graduate School of Public Policy. Berkeley: University of California, June 1976. (Cited as "Underclass.")

*Levy, Frank, and Wiseman, Michael. "The California Welfare Reform Act: An Overview of the Numbers." Graduate School of Public Policy Discussion Paper No. 61. Berkeley: University of California, November 1976. (Cited as "Overview.")

*Rence, Cynthia, and Wiseman, Michael. "The California Welfare Reform Act and Participation in AFDC." Department of Economics Discussion Paper No. 81. Berkeley: University of California, July 1976. (Cited as "Participation.")

Wiseman, Michael. "Change and Turnover in a Welfare Population." Department of Economics Working Paper No. 70. Berkeley: University of California, August 1976. (Cited as "Change.")

________. "County Welfare: Caseload Growth and Change in Alameda County, California, 1967-73." Department of Economics Working Paper No. 72. Berkeley: University of California, August 1976. (Cited as "County Welfare.")

________. "Graphs, Tables, and Stories." Department of Economics Working Paper No. 80. Berkeley: University of California, July 1976. (Cited as "Graphs.")

Footnotes

[1] Looking at poverty in this way begins to overcome one objection people often raise about the federal poverty standard--that it is too crude a measure of welfare because it fails to distinguish between, for example, someone who is $2 above the poverty line and someone who is $20,000 above the poverty line. Where the poverty standard is a "yes-no" measure, the proportion of time one spends below the line is a continuous measure. Moreover, because incomes fluctuate from year to year, there is a general correponence between this measure and economic welfare. Someone with very high income in a given year will probably spend a small proportion (if any) of his time in poverty in the years to come, whereas someone with current income just above the poverty line this year has a good chance of being in poverty frequently during the years to come.

[2] Attributing these differences to "bad luck" ignores the possibility that the differences may be due to unobserved variables such as alcoholism or a particularly bad attitude or a particularly depressed economic region. Where bad luck is a temporary phenomenon, a wage differential arising from unobserved variables may persist over time. We test for the persistence of these differentials in appendix C of the "Underclass" paper.

[3] Recall that poverty as defined here is based on pre-welfare income. Moreover, individuals who in 1967 were over 60 or were in a household headed by someone over 60 or critically disabled have been excluded from the population.

[4] See the *Codebook* and "County Welfare," section II.B, for a discussion of the sample and preparation of the data.

[5] The CWRP is described in "Litigation."

[6] Basic cross tabulations and other information on the sample and caseload are provided in "Graphs."

[7] See "Graphs" for sample narratives.

[8] See "Participation" for this argument.

[9] Caseload data are reproduced in "Graphs."

[10] The factors that slowed the growth of California's welfare program after 1970 are discussed in "Overview."

[11] See "County Welfare," section III.

[12] See Frances Fox Piven and Richard A. Cloward, *Regulating the Poor: The Functions of Public Welfare* (New York: Random House, 1971).

[13] See "County Welfare," section II.

[14] Ibid., section VI.B.

[15] Ibid., section IV.

[16] Ibid., section IV. See, also, "Litigation," section IV.B.

[17] "Change," section V.

[18] Ibid.

[19] Ibid., section VI.

[20] Ibid.

[21] Ibid.

[22] Ibid., sections V and VI.

[23] See Gerald Silverman and Michael Wiseman, "Evaluating Social Services: Did the General Accounting Office Help?" *Social Service Review* 48 (3): 315-326.

HOW BIG IS THE AMERICAN UNDERCLASS?

by

Frank Levy

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ABSTRACT

Each year a significant portion of the poverty population leaves poverty. In this paper, I define a sample of people who were poor in 1967. I then follow them over time to determine the extent to which poverty is a permanent phenomenon. The original sample represented 16.35 million people. I find this sample can be thought of as three separate groups. One is an underclass of 7.7 million people who were poor in 1967 and who remained poor through most of the next six years. The second group contained 4.1 million people who were poor in 1967 but who were out of poverty for five or six of the next six years. The third group contained about 4.4 million people who were poor half the time between 1967 and 1973.

I show that the members of the underclass can be predicted in advance through a combination of their family size and cross-section approximation of their permanent incomes.

How Big is the American Underclass?

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1. Introduction

Every year an important fraction of the poverty population leaves poverty. Some are in households who experience increased earned income. Others are young adults who leave poverty households and form non-poor households of their own. Still others are female heads of households who remarry.

Some data is useful for perspective. The 1967 poverty population stood at 22.2 million people. In 1968 it declined to 20.4 million people. The decrease of 1.88 million was the net result of two offsetting flows. Between the two years, 8.2 million people had left poverty while 6.4 million people had entered. Simply put, one-third of the 1967 poverty population was out of poverty in 1968.

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*Associate Professor, Graduate School of Public Policy. I wish to thank my colleague and co-investigator, Professor Michael Wiseman, and my wife, Kathy Swartz for their time in discussing with me every aspect of this research. I have also benefitted from the comments of my colleague, Gene Bardach, Jacob Benus of SRI, Jon Peck of Yale University, Jonathan Lane of the Department of Health, Education and Welfare, Joseph Minarak of the Brookings Institution, Robert Hall of MIT, Edward C. Banfield of Harvard University, Bradley Schiller of the University of Maryland, Jerry Hausman of MIT, and various members of the Income Distribution-Labor Seminar at Yale and the Human Resources Seminar at MIT. I have also benefitted from the written work of Lane, Minarak, Terrence F. Kelly of the Urban Institute, John McCall of RAND, and Thad Mirer at S.U.N.Y., Albany.

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Table 1 contains figures for the six subsequent years. The data show that even in a year when the poverty population increased, large numbers of people were leaving poverty while their places were being taken by others

For some people, leaving poverty is a statistical artifact, a small and temporary change in income that pushes their household just above the poverty line. For others the change is more significant, marking the beginning of a lifetime earnings cycle or the addition of a new principal earner to the household.

In this paper I analyze the structure of individual movements out of poverty for the years 1967-73. My data source will be the Panel Study on Income Dynamics published by the University of Michigan Survey Research Center. My purpose is to answer a series of questions:

o What are the general characteristics of the poverty population? In What parts of the country do they live? What are their education levels? How large are their families?

o To what extent is poverty "caused" by the low wages and low hours worked of the household head? To what extent is it caused by large numbers of children in the family?

o To what extent do low wages and low hours persist over time for an individual? To what extent do they fluctuate from year to year?

o Suppose I define a sample of people who represent the 1967 poverty population and then follow them over time. How many remain below the poverty line? How many of them move above the poverty line and by how much? Once an individual moves above the poverty line, what are the chances that he or she will return to poverty?

o What kinds of people cross the poverty line? How many are male household heads? How many are female household heads with children?

o To what extent are movements across the poverty line associated with changes in the household head: for example, a female head who remarries or a young adult who moves out of his parent's home to form a household of his own?

o To what extent is a household's expected income -- the average income of all households with similar characteristics -- useful in identifying who will leave poverty and who will stay?

TABLE 1

ANNUAL FLOWS IN AND OUT OF POVERTY

	Poverty Population (persons)	People Leaving Poverty	People Entering Poverty
1967	22,208,000		
		8,195,000	6,364,000
1968	20,377,000		
		7,621,000	5,373,000
1969	18,129,000		
		5,874,000	6,489,000
1970	18,744,000		
		6,785,000	7,658,000
1971	19,617,000		
		8,681,000	5,051,000
1972	16,334,000		
		5,689,000	4,561,000
1973	15,080,000		

Source: Panel Study on Income Dynamics (Also see footnote 1).

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[1] These figures and all subsequent data in this paper are calculated in the Five-Year and Seven-Year Merged Individuals Tapes of the Panel Study on Income Dynamics collected by the Survey Research Center of the University of Michigan. I have applied a constant scale factor to each year's sampling weights so that annual aggregates in the sample correspond to estimates of the U.S. population for that year.

I have counted the poverty population by using the poverty standard supplied by the Panel Study, a standard based on the Social Security Administration poverty standard (the "Orshansky Standard"). This standard differs from the Census poverty standard in several respects. These differences are discussed in detail in pp. 9-13.

Some of my questions have a familiar ring. Certainly other authors have studied the characteristics of the poverty population at a point in time. My tabulations will differ from theirs because I will look at a somewhat different population, one more relevant to current policy debates.

Most previous poverty studies focused on the entire poverty population including all households whose cash income fell below a government defined poverty standard. The passage of the Supplemental Security Income Act of 1971 (SSI) established permanent assistance for two parts of that population: poor households with a head over 65 years old, and poor households with a head who was critically disabled.

Conversely, current debates over welfare reform, food stamps, extensions of medicaid, and related programs are concerned with the rest of the poor, the households whose heads are neither aged nor critically disabled. And to this group should be added similar households that would be poor except for welfare payments. This is the group I will study. I will refer to it as the "target population" and I will define it in the following way:

Definition of the Target Population

The pre-welfare poor are defined as the set of individuals whose cash income exclusive of welfare payments (AFDC, AFDC-U, General Assistance) falls below the poverty line.

The target population consists of the pre-welfare poor with the following exclusions: individuals over 60, individuals in households headed by someone over 60, and individuals in households headed by someone who is under 60 but critically disabled; that is, the pre-welfare poor minus the kinds of people who are eligible for SSI.[2]

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[2] I have used the age cut-off of 60 because I will be defining a cohort and following them over seven years, and I want to reduce the number of people who turn 65 during the period. I have excluded any individual over 60 because SSI provides aid to aged individuals whether or not they are household heads. The same applies to individuals who are critically disabled but the Panel Study does not permit determining the degree of disability for people who are not household heads.

While some of my questions are standard, others are relatively new. I refer here to the questions on dynamics: how permanent are low wages, how long do people stay in poverty and so on. The questions are natural ones to ask and yet few people have explored them. Why? There are, I think, two reasons. One is the lack of good longitudinal data on poor individuals. The first systematic study of movements in and out of poverty by Terrence Kelly involved his matching subsequent samples of the Current Population Survey, a heroic job.[3] The other reason is a vague feeling among social scientists that the poor are immobile, somehow mired in a "culture of poverty." As I read it, the consensus view in the 1960's was something like this: "If the country can sustain economic expansion, the size of the poverty population will be reduced. But if the size of the poverty population remains constant, the same individuals will be in poverty." This conception and its relation to the culture of poverty are not directly relevant to the data at hand, but are interesting in their own right. I have included a short summary of their development as Appendix A.

Were the social scientists right? Yes and no. Among the 1967 target population, only 25% were "poor by mistake" in the sense that they were out of poverty five or six of the next six years. Another 30% hovered around the poverty line and were poor about half the time. The remaining 45%, about 7.7 million people, were poor almost all the time. The one year poverty figures exaggerate the amount of prolonged poverty, but by no more than a factor or two.

Nonetheless, a well-defined culture of poverty implies something more than low incomes. It implies that people are poor through maladaptive behavior, particularly in the labor market. By contrast, over half of the 1967 target population lived in male-headed households and most of these male heads worked close to full time. Their poverty status was due to a combination of low wages and large families. Similarly, a culture of poverty implies that poverty status is passed from generation to generation. In fact, the limited evidence in the Panel Study suggests that most poor children who form their own households have incomes that significantly exceed both their parents' incomes and the poverty standard.

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[3] Terrence F. Kelly, "Factors Affecting Poverty: A Gross Flows Analysis," in the Report of the President's Commission on Income Maintenance, Technical Studies Volume, Washington D.C., GAC, 1968

In summary, long term poverty is a real problem, but the cultural aspects of the problem are very unclear.

The remainder of this paper will be divided into six sections. In Section II, I derive estimates of the target population for the period 1967-1973. I then identify those individuals in the 1967 target population and follow them to see how many remained in poverty and how many moved above the poverty line. I show that between 1967 and 1973, the average persons in the 1967 target population spent 2.7 years above the poverty line. By 1973, 58% of the population was out of poverty. These flows were heavily conditioned by the unemployment rate and so many of those who were out of poverty in 1973 would return in the future. Nonetheless, the population showed greater mobility than is implied by most literature on the culture of poverty.

In Section III, I begin to examine why this mobility occurred by looking at why people were in the target population in the first place. I find that most male household heads had some distinguishing characteristic: very low education, a rural residence, and so on. These characteristics imply their wages should be low. But in fact, their wages are even lower than a wage I estimate for them based on their characteristics. This gap raises the possibility that they are below their long run wages through some piece of bad luck.

Female-headed households, by contrast, have fewer distinguishing characteristics. In most cases, a woman cannot earn enough to support three or more children even if she works full time.

I conclude the section by performing a series of "what-if" experiments to assess the relative impact of low wages, low hours, and large families in causing poverty status. I conclude that low wages are a cause of poverty for male household heads but low hours are not; that neither wage nor hour changes would have an impact on poverty among female heads; and that large families are a cause of poverty among both groups.

In Section IV, I examine in detail how people crossed the poverty line between 1967 and 1968. I find first that relatively few of the crossings were associated with changes in household heads: e.g., a female head who remarries. Most individuals who crossed the poverty line were in male-headed households where the head experienced a small increase in hours worked and a significant increase in his average wage rate. Female headed households were less likely to cross the poverty line. When they did, it was through a combination of increased wages and hours for non-whites and increased non-labor income for whites.

I conclude the section by developing two models to explain these movements. The models are predictive: given a person's circumstances in 1967, they predict the probability he or she will be out of poverty in 1968. Using these models, I explore the reasons why non-white poverty is relatively more serious than white poverty.

In Section V, I continue to analyze movements across the poverty line for the 1967-1973 period. In particular, I focus on those individuals who began as children in the target population and subsequently formed their own households. On average, these children had incomes significantly higher than their parents and higher than the poverty line. The one exception was non-white young women who had only an even chance of escaping poverty in their new households.

I conclude the section by reinterpreting the two models of Section IV as permanent income models. Under this interpretation, the models can predict the proportion of the time individuals will be poor in the long run. I use the models to predict the size of the underclass, that portion of the target population who will be poor at least three years out of four in the near term. The predicted population contains 7.7 million people and it closely resembles the portion of the target population who in fact were out of poverty no more than two years between 1967 and 1973. By contrast, the model is too pessimistic in predicting the behavior of the rest of the target population.

Section VI contains a brief summary of results.

Section VII, really an appendix, presents an estimate of a labor supply curve for female household heads with children. The curve was designed to measure the impact of AFDC payments upon the labor supply of female household heads.

The report concludes with four appendices. Appendix A is a summary of the popularization of the culture of poverty. Appendix B discusses the estimation of wage equations used in Sections II and III. Appendix C discusses the extent to which low wages (actual wages below estimated wages) are permanent conditions. Appendix D discusses the construction of a household's estimated income, a variable used in Section III.

Careful readers will notice that some of the numbers presented here differ from numbers in an early version of this paper. Since the earlier paper was written, I have discovered several mistakes including an overcorrection for inflation and a miscoding of a disability variable[4] I apologize for the discrepancy.

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[4] "How Big is the American Underclass?" (First Version), Working Paper #39, Graduate School of Public Policy, U.C. Berkeley, November, 1975.

II. What Do the Numbers Really Look Like?

In this section I will develop estimates of the target population in order to answer the following question: Suppose I identify individuals in the 1967 target population and follow them over time. How many of them will remain in poverty and how many will have incomes above the poverty line?

The data will show a significant amount of mobility. By 1973, 58% of the 1967 target population had pre-welfare incomes above the poverty line. About one-sixth of this mobility was due to the economic expansion of 1972-73. The remainder was based on individual movements out of poverty that would have occurred even in an economic steady state.

A Description of the Data

Before turning to the results, I will briefly describe the data that underlie them. The Panel Study on Income Dynamics was developed by the Survey Research Center of the University of Michigan under contract to the Office of Economic Opportunity. The original sample consisted of 18,272 individuals in 4,802 households.[1] The project emphasized low income families and so poor households and non-white households were oversampled, but the data includes sampling weights that permit the reweighting of actual observations into national aggregates.

The data's particular strength is its attempt to follow the original sample members even as they form new households. When a sample child left his or her parent's household, an attempt was made to follow the child's household as well as the parents'. When a husband and wife were divorced, an attempt was made to follow both people.

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[1] See: "Cumulative Non-Response 1968-73," Appendix B in Greg J. Duncan and James N. Morgan eds., Five Thousand American Families, Volume III, Institute for Social Research, The University of Michigan, 1975.

The formation of a new household is likely to have a major impact on individual incomes and so this kind of data is crucial if I am to follow individuals' poverty status over time.

The data does have limitations. A sample size of 18,000 sounds quite large but the numbers fall quickly under any kind of disaggregation. For example, the number of white, male household heads in the 1967 target population is represented by 74 observations. Correspondingly, many of the estimates I present are not at all precise and I will try to emphasize that fact as I proceed.[2]

Any data set raises questions of accuracy: how well do sample totals reflect national aggregates. A longitudinal sample raises an additional question about the distribution of non-respondents after the first year.

The Panel Study aggregates have been examined by Joseph Minarik of the Brookings Insitution.[3] His focus was a comparison of household heads as described in the Panel Study and described in the Current Population Survey. His method involves comparisons using one characteristic at a time: e.g. the proportion of male-headed households in the Panel Study versus the proportion of male-headed households in the CPS. Minarik concludes that the Panel Study sample is generally representative of the U.S. population. Compared to the CPS, the Panel Study slightly undercounts aged household heads, it slightly overcounts racial minorities, it slightly undercounts household heads with an elementary school education, it slightly overcounts high school dropouts and so on. While these differences are enough to reject the hypothesis that the two surveys are statistically similar, they are not large enough to interfere with the outlines of the argument I will make here.

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[2] A second, less severe limitation arises from the grouping of the data. The basis of the data is the individual but the bulk of the data concerns the characteristics of the individual's family, particularly the head and wife. If one looks at the data record of a female child, it is possible to learn a good deal about the child, her father, her mother, where the family lives and so on. But the amount of information about other people in the household -- siblings, a grandmother, etc. is sharply limited. One knows the number of such people (the number of children, the number of adults, etc.) and their aggregate earnings, but little about their age, education, individual hours of work and so on.

[3] Joseph Minarik, "New Evidence in the Poverty Count," American Statistical Association, Proceedings of the Social Statistics Section, 1975, pp. 544-559.

A more striking finding by Minarik is the difference in poverty counts reported by the Panel Study and the CPS. From 1967 through 1973, the Panel Study estimates of the poverty population are about 6-7 million smaller than estimates in the CPS. The data is contained in Table 2. Minarik has analyzed the differences[4] and concludes they arise from the under-reporting of income in the CPS. If his explanation is correct, mobility estimates using the Panel Study will be less than mobility estimates that used the CPS.[5]

The issue of sample non-response is potentially more serious. Between 1968 and 1973, Survey Research Center personnel lost 21% of the original sample. Most of the loss occurred in 1968. Duncan, Morgan et. al. have analyzed the characteristics of non-respondents and have found them to be randomly distributed throughout the sample as a whole.[6] In particular, they report extremely weak relationships

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[4] Minarik, op. cit. A small portion of these differences arise from small differences between the poverty standard used by the Panel Study and the poverty standard used by the CPS. Where the CPS has a single food allowance for a child of any age, the Panel Study varies a child's food allowance according to his or her age. The CPS defines a poverty standard for households with up to seven children and compares all larger families to the seven-child standard. The Panel Study computes a poverty standard that increases with each child. While there are other small differences, they do not begin to explain the differences in poverty counts. I am indebted to Minarik for pointing out these differences to me.

[5] To see why this is so, assume that underreporting of income involves only a small dollar amount for each family. Thus the 6-7 million person difference in poverty counts represents people who are just above the poverty line in the Panel Study. These households are of two types. One type are female-headed families whose primary income is welfare. But since the target population is defined on the basis of pre-welfare income, these female-headed families are in the target population already. The other type of household is one with enough non-welfare income (usually labor income) to put it near the poverty line. More of these families will appear as poor in the CPS than in the Panel Study. I will show in Section 4 that working poor families (primarily male-headed families) are more mobile than female-headed families. To the extent that a target population defined using the CPS would contain more working poor families, it would show more mobility.

[6] Duncan and Morgan (eds.), op. cit.

TABLE 2

ESTIMATES OF THE POVERTY POPULATION FROM THE CURRENT POPULATION SURVEY AND FROM THE PANEL STUDY ON INCOME DYNAMICS

(all figures in numbers of individuals)

	Current Population Survey	Panel Study
1967	28,510,000	22,208,000
1968	27,769,000	20,377,000
1969	24,147,000	18,129,000
1970	25,420,000	18,144,000
1971	25,559,000	19,617,000
1972	24,460,000	16,334,000
1973	22,293,000	15,080,000

Source: Panel Study and U.S. Bureau of the Census, Current Population Reports Series P60, No. 98, January 1975, p. 13.

between the response rate and the individual's income in 1967, the welfare income of the head, the family size, the respondent's race, the respondent's sex and the respondent's relationship to the head of household. There is always the possibility that "successful" people keep reporting while failures drop out of the sample. But this becomes a problem only if success next year is totally uncorrelated with other characteristics like age, race, and current income, an unlikely circumstance. The problem of sample loss is unlikely to affect the results reported here.

Estimating the Target Population

I now turn to estimating the size of the target population. At the risk of repetition, I restate the definition of the target population below:

DEFINITION OF THE TARGET POPULATION

> The pre-welfare poor are people whose household cash incomes minus welfare (AFDC, AFDC-U, General Assistance) leave them below the poverty line.
>
> The target population is defined as the pre-welfare poor with the following exclusions: all individuals over 60, all individuals living in a household headed by someone over 60, and all individuals living in a household headed by someone who is critically disabled.

Because many readers may be unfamiliar with the poverty population as normally defined, I briefly will review its composition. In 1967, the Social Security Administration poverty standard for an urban family of four stood at $3350. By this standard, 22.2 million people were poor. I display this population in Table 3 using a division developed by John Lansing and Katherine Dickinson.[7]

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[7] See John B. Lansing and Katherine Dickinson, "A Description of Eight Categories of the Poor," Working Papers on the Study of Family Economics, Number 8, Survey Research Center, University of Michigan mimeo. Table 2 presents the Lansing-Dickinson classification in slightly modified form.

The Lansing-Dickinson classification groups families by the approximate labor market potential of the household head. In 1967, 30% of the poverty population lived in households headed by someone over 65 or someone with critical disability, people from whom we do not expect substantial labor market activity. An additional 21% lived in families (households of more than one person) headed by a woman, families for whom our labor market expectations are mixed. The remaining 49% of the poverty population lived in households headed by a male or an unrelated female who was neither over 65 nor critically disabled. This is the group for whom our labor market expectations are highest.

Table 3 also contains the Lansing-Dickinson division for 1971 and 1973.[8] The four years between 1967 and 1971 saw a roller coaster unemployment rate that went from 3.5% in 1969 to 6.1% by December of 1970. A simultaneous event was the sharp increase in transfer payments that arose from increased payment levels and increased participation in existing programs, particularly AFDC.[9]

Between 1967 and 1971, the poverty population declined by 2.6 million people. The decrease was concentrated among families with an able bodied, male head who was less than 65. The numerical size of the other groups: the aged, the critically disabled and so on, remained relatively constant.

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[8] The first comprehensive release of the Panel Study data contained individual histories for 1967-71. A subsequent release followed the same individuals for two additional years. The original work for this paper was done using the five-year data set. Late in my work, I obtained an extract from the seven-year set and extended some of my results. The period between 1967 and 1971 averages out to something like an economic steady state while the period between 1971 and 1973 is purely an economic upturn. Correspondingly, it is useful to mark the data for all three years to distinguish between income movements that might have occurred in a steady state from movements associated with the upturn.

[9] For a discussion of increased participation in AFDC over the period, see Barbara Bolland, "Participation in the Aid to Families with Dependent Children Program (AFDC)" in The Family, Poverty and Welfare Programs: Factors Influencing Family Instability, paper #12 (part 1) in Studies in Public Welfare, published by the Subcommittee on Fiscal Policy of the Joint Economic Committee, U.S. Congress, November 1973, pp. 139-179.

TABLE 3

POVERTY COUNTS FOR 1967, 1971 AND 1973 BY CHARACTERISTICS OF HOUSEHOLD HEAD

(in millions of individuals)

Characteristics of the Household Head	1967	1971	1973
65 or over	3.58m	3.59m	3.23m
Under 65 but critically disabled	3.14m	3.36m	2.00m
Non-Aged, Non-Disabled			
Male-headed family	9.76m	6.97m	5.07m
Male unrelated individual	.33m	.38m	- *
Female-headed family	4.86m	4.59m	4.78m
Female unrelated individual	.53m	.73m	- *
	22.20m	19.62m	15.08m
Percent Non-white	50%	43%	54%

Source: Panel Study on Income Dynamics

Classification modified from: John B. Lansing and Katherine Dickinson, "A Description of Eight Categories of the Poor," Working Papers on the Study of Family Economics, number 8, Survey Research Center, University of Michigan mimeo.

*My data for 1973 precluded estimating unrelated individuals separately for that year. See footnote 8 on page 14.

The two years between 1971 and 1973 saw an economic expansion out of recession. In 1971 the unemployment rate averaged 5.9%. By 1973 it had fallen to 4.9 . Correspondingly, the poverty population fell from 19.6 to 15.1 million people. As might be expected, the bulk of this reduction took place among families headed by an able-bodied male -- families in the best position to take advantage of an improved labor market. An additional reduction came among households whose head reported a critical disability.

Table 4 presents the Lansing-Dickinson classification again except that now I exclude welfare payments (AFDC, AFDC-UP, General Assistance) from family income, and I merge some classifications for easier reading.[10] Note that in 1967 the difference between pre-welfare and post-welfare poverty is not that great. The average level of welfare payments was low relative to the poverty line and few payments went to households with any earnings. These factors together meant that most welfare recipients were poor even with welfare and they were already counted as poor in Table 3. By 1971, the rising participation in welfare programs and the increased benefit levels in some states pushed a number of recipients above the poverty line and the pre-welfare poverty count was 4.6 million more (23% more) than the poverty count when welfare payments were included.

From 1971 to 1973, the pre-welfare poverty population declined by 4.1 million people or 17%. During the same time, the post-welfare population declined by 24%, a figure that suggests that increasing welfare payments during the period were pushing greater numbers of recipients over the poverty line.

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[10] For users of the Panel Study data, I am defining 1967 income in Table 3 as V81 - V80 - V257, where V257 has been converted into a continuous variable. Corresponding definitions are used for subsequent years.

TABLE 4

POVERTY COUNTS WHEN WELFARE PAYMENTS ARE EXCLUDED FROM FAMILY INCOME

(all numbers in millions of people)

Characteristics of the Household Head	Poor in 1967	Poor in 1971	Poor in 1973
65 or over	4.12m	4.11m	3.84m
Under 65 but critically disabled	3.57m	4.21m	3.01m
Non-Aged, Non-Disabled			
Male-headed family (including unrelated individual)	10.16m	8.65m	6.02m
Female-headed family (including unrelated individual)	6.82m	7.20m	7.21m
	24.68m	24.17m	20.04m
Percent Non-white	50.9%	43.6%	50.6%

Source: Panel Study on Income Dynamics

Table 5 summarizes data on three populations: the normal poverty population, the pre-welfare poverty population, and the target population. The target population was constructed by excluding three groups from the pre-welfare poor: anybody over 60, anybody living in a household headed by a person who is over 60, and anybody living in a household headed by someone who is critically disabled. As I have previously argued, it is this target population that lies in the center of current discussions about welfare reform, food stamp regulation, and other anti-poverty programs.

In general, the target population is three-fourths as large as the normal poverty population. It is increased by people who would have been poor but for welfare. It is decreased by exclusion of the elderly and critically disabled. The population is about 50% non-white and 60% of the population are children under the age of 18.[11]

Row (4) in Table 5 contains information to set the context of the discussion of economic mobility that follows. It is useful to think of two kinds of individual economic mobility. One kind occurs in an economic expansion when the number of people in poverty are declining. The other occurs even when the number of people in poverty remains constant: some individuals are moving out of poverty but others are moving in.

At first glance, it appears the number of people fitting the definition of the target population declined by about 1 million between 1967 and 1971. This suggests an economic expansion. In fact, part of this "decline" hinges on the definition of disability. The data in Row (4) show there were 1.25 million people who began as members of the 1967 target population, and who were still poor in 1971, but who lived in households where the head became critically disabled between 1967 and 1971.

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[11] The data in Table 5 suggest that 53% of the 1973 target population were children but that proportion is downward biased. The Panel Study data includes sampling weights for people who were in the sample in 1971. This means that children born in 1972 and 1973 are not included in calculations. I have reweighted the aggregate population to compensate for this omission but I was unable to perform a comparable reweighting for children per se.

TABLE 5

A SUMMARY OF ALTERNATIVE POVERTY POPULATIONS

(in millions of people)

	1967	1971	1973
1) The Normal Poverty Population	20.20m	19.62m	15.08m
2) The Pre-Welfare Poverty Population*	24.68m	24.17m	20.04m
3) The "Target Population"**	16.35m	15.34m	12.56m
4) Members of the 1967 Target Population Whose Household Head Subsequently Became Critically Disabled	-	1.25m	.74m
5) Proportion of the Target Population Who are Non-white	54%	49%	52%
6) Proportion of the Target Population Who are Children Under 18	63%	61%	53%

Source: Panel Study on Income Dynamics

*The pre-welfare poverty population is the population who falls below the poverty line when welfare payments are excluded from income.

**The "target population" is the pre-welfare population excluding families (and unrelated individuals) where the head of household is over 60 or critically disabled and individuals over 60 who are not household heads.

Had these household heads not become critically disabled, they would have remained within the definition of the target population and the 1971 target population would have contained 16.6 million people (15.34 million + 1.25 million). By applying similar reasoning to the data for 1973, I arrive at the following estimates: Between 1967 and 1971, economic conditions averaged out to a steady state. Between 1971 and 1973, economic conditions were expansive causing the size of the target population to decline by about 20%.

Having set this background, I now turn to the major question of this section: Suppose I identify the individuals who were in the 1967 target population and I follow them over time. How many remain in poverty and how many move above the poverty line? Data on this question is contained in Table 6.

In Table 6, I construct income distributions based on the ratio of a household's pre-welfare income to its poverty standard. The sample consists of all members of the 1967 target population. When a sample member moves into a new household, the new income and poverty standard apply. If a sample member turns 65 or becomes critically disabled, he is retained in the calculations.

The data show a significant amount of mobility over time. Between 1967 and 1968, 30% of the original population moved across the poverty line and about one-third of these moved above (1.5)x the poverty standard. This progress continued through 1970 when 43% of the original population was above poverty line and more than half of these were above (1.5)x the poverty standard. These proportions remained constant through 1971 as the economy went into a sharp downturn. As the economy began to expand in 1972, 53% of the original sample had incomes above the poverty line. In 1973, 58% of the original sample were

TABLE 6

ANNUAL INCOME DISTRIBUTIONS FOR MEMBERS OF THE 1967 TARGET POPULATION FOR THE YEARS 1967-73

Define Z as the ratio: $\left[\frac{\text{Pre-Welfare Household Income in Year } t}{\text{Household Poverty Standard in Year } t}\right]$

	$Z \leq .5$	$.5 < Z \leq 1.0$	$1.0 < Z \leq 1.5$	$1.5 < Z$	Totals
1967	45%	55%	-	-	100%
1968	34%	35%	19%	12%	100%
1969	31%	31%	23%	15%	100%
1970	30%	27%	20%	23%	100%
1971	30%	26%	20%	24%	100%
1972	23%	24%	21%	32%	100%
1973	18%	24%	22%	36%	100%

Source: Panel Study on Income Dynamics

in households with pre-welfare incomes above the poverty line and 35% of the original sample had pre-welfare incomes above (1.5)x the poverty standard.

To summarize, about three-fifths of the original 1967 target population were out of poverty by 1973. One-quarter of this mobility occurred in 1972-73, a period of economic expansion when the poverty population itself was being reduced.[12] But the other three-quarters occurred during 1967-71 when the average condition of the economy was a steady state.

Mobility by Race and Individual Mobility

Before concluding this section, I want to look at two additional questions. First, is mobility evenly distributed by race? The answer is no. Whites are significantly more mobile than non-whites. Data on this question is given in Table 7 which presents the 1973 income distribution for the 1967 target population, disaggregated by race. Recall from Table 6 that in that final year, 58% of the 1967 target population was out of poverty. If mobility were equally distributed among whites and non-whites, we would expect 58% of each racial group to be out of poverty. In fact, 69% of whites were out of poverty compared to 50% of non-whites. The differences are even more dramatic at the tails of the income distribution: 27% of non-whites but only 6% of whites had 1973 pre-welfare incomes below one-half of the poverty standard. In part these differences are due to the larger proportion the non-white poor who live in female-headed families, a subject I will discuss in subsequent sections. But even when the sex of the family head is controlled for, non-whites show less mobility than whites. I will analyze this finding in detail in Section IV.

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[12] This does not mean that one-quarter of the mobility was caused by the economic expansion. Between 1971 and 1973, 14% of the 1967 target population left poverty. Had the economy not been expanding, this figure would have been lower but there is nothing to suggest it would have been zero. A more plausible figure would be about 4% per year for each of the two years.

TABLE 7

THE DISTRIBUTION OF WHITES AND NON-WHITES IN THE 1973 INCOME DISTRIBUTION OF THE 1967 TARGET POPULATION

Define Z as the ratio: $\frac{\text{Pre-Welfare Income in 1973}}{\text{Household Poverty Standard in 1973}}$

	$Z \leq .5$	$.5 < Z \leq 1.0$	$1.0 < Z \leq 1.5$	$1.5 < Z$	Totals
Proportion of Non-Whites in Each Class	27%	23%	23%	27%	100%
Proportion of Whites in Each Class	6%	25%	23%	46%	100%

Source: Panel Study On Income Dynamics

My final question concerns the mobility of individuals. To this point I have made all calculations in terms of groups of people. Group mobility occurs when the proportion of the group out of poverty increases over time. But to what extent do these group figures represent large numbers of individuals cycling in and out of poverty? To what extent do they represent a smaller group of individuals making continuous progress? Data to begin answering these questions are contained in Table 8.

In Table 8, individuals move one row downward for each year, and they move only to adjacent cells. If an individual is poor next year, he will move to the cell directly below his cell this year. If an individual is not poor next year, he will move to the cell one row down and one column to the right.

The inter-cell flows in Table 8 suggest some crude propositions:

-- A person in the target population had a .3 chance of leaving poverty in 1968. If he did get out in 1968, he had a .8 chance of staying out in 1969. If he did stay out in 1969, he had a .8 chance of staying out in 1970. This probability of staying out one more year remained near .8 during the economic downturn of 1971 and then rose sharply in 1972 and 1973.

-- A person in the target population had a .7 chance of remaining in poverty in 1968. If he did stay in poverty in 1968, he had a .8 chance of staying in poverty in 1969. If he did remain in poverty in 1969, he had a .8 chance of staying in poverty in 1970. This probability of staying in one more year remained near .8 for the rest of the period.

The two cases are assymetric because the target population contains a large number of children. When a person gets out of poverty and stays out for several years, we take this as evidence that he or she can continue to earn income in excess of the poverty line. We are not surprised that the probability of continuing out of poverty rises. But when a person stays in poverty for a number of years, he or she may be a child in a poor household. Eventually the child will form his own household and this household may be above poverty

TABLE 8

DISTRIBUTION OF YEARS SPENT OUT OF POVERTY BY THE TARGET POPULATION*

(All cell entries are in millions of people.)

	Number of Years Out of Poverty						
	0	1	2	3	4	5	6
1967	16.35m	-	-	-	-	-	-
	[.69]	[.31]					
1968	11.41m	4.94	-	-	-	-	-
	[.76]		[.83]				
1969	8.86m	3.38	4.11	-	-	-	-
	[.79]		[.55]	[.84]			
1970	7.02m	3.34	2.53	3.44	-	-	-
	[.84]		[.54]	[.58]	[.81]		
1971	5.92m	2.65	2.85	2.13	2.80	-	-
	[.86]		[.60]	[.77]	[.81]	[.88]	
1972	5.14m	1.84	2.25	2.59	2.06	2.45	-
	[.79]		[.50]	[.69]	[.78]	[.78]	[.96]
1973	4.06m	2.01	1.62	2.12	2.47	1.71	2.36

*Numbers in brackets refer to the probability of moving between cells.

Source: Panel Study on Income Dynamics

even though the parent's household remains poor. That is why the probability of remaining in poverty one more year does not rise much above .8 for the period under study.

The two groups described above -- the "always-ins" and the "always-outs" -- are the only pure groups in Table 8. Other cells -- for example, those who had been out of poverty for one year in 1969 -- contain a mixture of those who left poverty for the first time in 1969 and those who left in 1968 but who fell back in. The probability of being out of poverty one more year for these groups is closer to .65. But by reading across the rows, one can see that even in these mixed groups, the more years a person has been out of poverty, the higher the probability of staying out one more year.

Table 8 also indicates the variety of individual experiences. Between 1967 and 1973, the average member of the target population was out of poverty 2.7 years. But 4.1 million people -- 25% of the group -- were out of poverty five or six years while another 4.1 million people never left poverty at all.

A Short Summary

My purpose in this section was to answer a simple question: If I identified a group of poor people in 1967 and followed them over time, how many of them would remain poor and how many of them would leave poverty. The answer is that mobility is significant. I defined a group of people who are relevant to current policy debates: a group who are poor before welfare income is counted, and who are not in households eligible for SSI benefits. By definition, all of this group were poor in 1967. By 1973, 58% were above the poverty line. About one-seventh of this mobility was influenced by the economic expansion of 1972-73. But the remainder had taken place between 1967 and 1971, a period approximating an economic steady state.

Why did this mobiltity occur? I start to explore this question in the next section.

III. Why Are People Poor in the First Place?

Why do some people move out of poverty while other people stay? That question raises a prior question: Why are people poor in the first place? What among their circumstances might change to lift them out of poverty?

I begin to answer these questions by presenting a demographic picture of the 1967 target population: where they lived, the average education of their household heads, and so on. I then describe their labor market behavior including their hours worked, their wages, and the wages one might expect them to receive on the basis of their age, education and other characteristics. Next I will measure the relative importance of low wages, low hours, and large families in determining poverty status. These are the three factors cited by most authors as main "causes" of poverty. To the extent that low wages and hours are determinants of poverty, it is important to know whether an individual's wages and hours change substantially over time and I present evidence on this question. I conclude the section with a summary of results.

Throughout the section I will be comparing poor families with similar families who are not poor. To save words, it will be useful to define an additional term:

Definition of the Counterpart Population

> The counterpart population is defined as the set of all households whose pre-welfare income place them above the poverty line, with the following exclusions: all individuals over 60, all individuals living in a household headed by someone over 60, and all individuals living in a household headed by someone who is critically disabled.

Thus the counterpart population is the mirror image of the target population, a demographically similar group whose pre-welfare incomes leave them out of poverty rather than in poverty.

A Description of Household Heads

A description of the target and counterpart populations appears in Tables 9-11. The data in Table 9 show sixty percent of the target population lives in male-headed households. But compared to the counterpart population, the target population is disproportionately non-white and contains a disproportionate number of female-headed families. The reader can get a feel for these proportions by considering the odds of being in the target population rather than the counterpart population -- i.e. the odds of being poor. Suppose a person in 1967 was under 60 and the head of his household was both under 60 and not critically disabled. A person in this group had a 10% chance of being poor.[1] If he was in this group in a white, male-headed household, his chances of being poor dropped to 4%. If he was in a family headed by a white female, his chances rose to 19%. If he was in a family headed by a non-white male, his chances rose further to 28%. And if he was in a family headed by a non-white female, his chances of being poor were a devastating 65%.

Table 10 contains data on the average age and education of household heads in the target and counterpart populations. The age data yield few differences. Household heads in both populations are 35-40 years old. The education data do show some differences. For each race-sex group, household heads in the target population have lower education than their counterparts. But for male heads this difference is substantial -- a four to five grade gap. For female heads, the gap is only 1-2 grades.

Table 11 contains data on the target and counterpart populations' 1967 place of residence. Location is measured in two dimensions: the region of the country, and the distance to a city of 50,000 or more.

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[1] A reminder that "poor" here refers to pre-welfare income being less than the poverty line.

TABLE 9

INDIVIDUALS CLASSIFIED BY THE RACE AND SEX OF THEIR HOUSEHOLD HEADS

(millions of individuals)

	1967 Target Population	Percent Composition	1967 Counterpart Population*	Percent Composition
White Males	5.02m	(31%)	123.45m	(83%)
Non-White Male	4.70m	(29%)	11.89	(8%)
White Female	2.45m	(15%)	10.49	(7%)
Non-White Female	4.18m	(26%)	2.21	(1%)
	16.35m	(100%)	148.04m	(100%)

*Both the target and counterpart populations refer to individuals under 60 in households headed by people who are both under 60 and not critically disabled. Target population households have pre-welfare income below the poverty line. Counterpart population households have pre-welfare income above the poverty line.

TABLE 10

AVERAGE AGE AND EDUCATION OF HOUSEHOLD HEADS IN 1967

	1967 Target Population	Non-Poor Counterparts
a) Average Age		
White Males	34.4 years	39.4 years
Non-White Males	41.4 years	38.8 years
White Females	37.0 years	41.3 years
Non-White Females	38.5 years	39.3 years
b) Average Education		
White Males	6.5 grades	11.5 grades
Non-White Males	6.3 grades	10.1 grades
White Females	9.1 grades	11.3 grades
Non-White Females	9.0 grades	10.1 grades

The idea of poverty brings two different pictures to mind: the inner city, black, female-headed family and the white, male-headed family in Appalachia. The data in Table 11 suggest both views are correct: Poverty is a rural phenomenon among male-headed families. Female-headed families are more evenly distributed across the country.

Again, probability statements are useful. I noted above that a person in a white, male-headed family had a 4% chance of being in the target population. If the person also lived within five miles of a city of 50,000, that chance drops to 1.5% If the person lived more than 15 miles from such a city, the chances rose to 6%. 80% of white male households in the target population live 15 miles or more from a city. For non-whites in male-headed families, the overall chance of being in the target population is 28%. Within five miles of a city, the chance drops to 20% while more than 15 miles from a city, the chance rises to 44%. These high rural rates of poverty occur even though the official poverty standard is reduced by 20% for people who list their occupations as farmers.

The geographic distribution of female-headed families is more uniform. About one-third of the female-headed families in the target population live close to cities of 50,000, while another one-third live more than 15 miles from such cities. The non-white, female counterpart population has a similar distribution.

TABLE 11

WHERE PEOPLE IN THE TARGET AND COUNTERPART POPULATIONS LIVED IN 1967

How To Read the Tables

Each table refers to the geographic distribution of a subgroup of the target and counterpart populations: people in households headed by non-white females, people in households headed by white males, and so on.

Each cell within a table refers to a particular combination of region and distance from a city of 50,000 or more.

The figures within each cell refer to the percentage distribution of the subgroup in question. The figure above the diagonal refers to the percentage distribution of the target population. The figure below the diagonal refers to the percentage distribution of the counterpart population.

A) The Geographic Distribution of Persons in Households Headed by a Non-White Male

	Distance to a City of 50,000 or More		
Region	Less Than 5 Miles	5-15 Miles	More Than 15 Miles
Northeast	8% 5%	5% 7%	-- 6%
North Central	2% 10%	1% 12%	-- 2%
South	9% 17%	8% 8%	48% 17%
West	7% 7%	1% 5%	11% 4%

TABLE 11 (continued)

B) The Geographic Distribution of Persons in Households Headed by a Non-White Female

Distance to a City of 50,000 or More

Region	Less Than 5 Miles	5-15 Miles	More Than 15 Miles
Northeast	7% 3%	5% 8%	4% 17%
North Central	10% 13%	14% 12%	2% 2%
South	10% 11%	6% 5%	23% 8%
West	7% 13%	8% 4%	2% 4%

C) The Geographic Distribution of Persons in Households Headed by a White Male

Distance to a City of 50,000 or More

Region	Less Than 5 Miles	5-15 Miles	More Than 15 Miles
Northeast	3% 4%	6% 8%	4% 15%
North Central	-- 5%	3% 10%	35% 17%
South	3% 4%	-- 6%	28% 12%
West	1% 5%	3% 6%	14% 6%

TABLE 11 (continued)

D) The Geographic Distribution of Persons in Households Headed by a White Female

Region	Distance to a City of 50,000 or More		
	Less Than 5 Miles	5-15 Miles	More Than 15 Miles
Northeast	9% 7%	11% 9%	15% 9%
North Central	8% 8%	5% 9%	6% 12%
South	7% 9%	8% 6%	10% 10%
West	9% 6%	1% 9%	10% 6%

Source: Panel Study on Income Dynamics

Regional Definitions

Northeast = New England, New York, New Jersey, Pennsylvania

North Central = Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin

South = Alabama, Arkansas, Delaware, D.C., Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Oklahoma, Tennessee, Texas, West Virginia

West = Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

A final word on the South. Previous studies have shown poverty to be largely a Southern phenomenon. The target population differs from the normal poverty population[2] but the data point to the same conclusion: 42% of the target population live in the South compared to 24% of the counterpart population. The missing variable is race. Poverty is disproportionately non-white and non-whites live disproportionately in the South.[3] When the data are controlled for race, the influence of the South *per se* becomes less important.

Together Tables 9-11 reemphasize the vulnerability of female-headed households. The typical poor male household head has some unusual characteristic: extremely low education, residence in a rural area, etc. By contrast, female heads who are poor and female heads who aren't poor look very much alike.

Table 12 contains data on the average number of children per household. Because the poverty standard increases with the number of children, it is reasonable to expect that poor families are larger than non-poor families and this is in fact the case. The data in Table 12 show that families in the target population average .3 to 2.7 more children per family than their counterparts. To what extent do these children "cause" poverty? Put another way, how many of these households would be above the poverty line if their income had to support only two children? I will return to the question later in this section.

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[2] In particular, the target population excludes welfare payments from income and so I might have expected it to show a more even geographic distribution than normal poverty counts.

[3] Specifically, 52% of all non-whites in the target population live in the South compared to 42% of all non-whites in the counterpart population. Similarly 28% of all whites in the target population and 22% of all whites in the counterpart population live in the South. These disparities are far smaller than the overall disparity of 42%-24% reported above.

TABLE 12

AVERAGE NUMBER OF CHILDREN PER HOUSEHOLD 1967

(figures in parentheses are standard deviations)

Characteristics of Household Head	1967 Target Population	1967 Non-Poor Counter-Parts
All White Males	1.94 Children (2.44)	1.67 Children (1.64)
All Non-White Males	4.39 Children (2.87)	1.64 Children (1.73)
White Females with Children Under 18	3.09 Children (1.66)	1.84 Children (.97)
Non-White Females with Children Under 18	3.61 Children (2.18)	2.36 Children (1.12)

Source: Panel Study on Income Dynamics

The Labor Market Experience of Household Heads

I now turn to data on the labor market experience of household heads. I will characterize this experience by three measures: the head's annual hours of work, the heads' average wage when working, and the head's estimated wage based on his or her personal characteristics.

Table 13 contains information on head's hours worked for the target and counterpart populations. Rather than present an overall average for each group, I divide the groups into two parts: the proportion of people in households where the head didn't work at all, and the average hours of work for those heads who did work. This two part format is particularly helpful for female household heads where a simple average obscures a bi-modal distribution: many women working long hours and many women not working at all. I expect that hours worked is in part a function of the national unemployment rate and so Table 13 contains information on hours worked in 1967 when the unemployment rate was 3.8% and information for 1971 when the unemployment rate was 5.9%.

I mentioned in Section 2 that many of these numbers are based on small samples. This is particularly true of such categories as poor female household heads without children. Correspondingly, the figures I present should be interpreted with some care.

With that qualification in mind, the data in Table 13 tell a consistent story. Most male household heads in the target population work, and they work on average almost as much as their counterparts. Of those individuals who lived in poor male-headed households in 1967, five percent lived in households where the head didn't work at all. Those heads who did work averaged about 1900 hours compared to 2300 hours for their counterparts.

TABLE 13

HOURS WORKED BY HOUSEHOLD HEADS IN 1967 AND 1971

A) Annual Hours Worked in 1967 by the 1967 Target Population and Counter-Part Population (all figures in hours per year - figures in parentheses are standard deviations).

	Target Population		Counter-Part Population
Characteristics of Household Head	Average Hours Worked For Heads Who Worked at All in 1967	Proportion of Group Who Lived in Households Where Head Did Not Work in 1967	Average Hours Worked by Heads Who Worked At All in 1967
White Male	1816 hours/year (1043)	4%	2340 hours/year (667)
Non-White Male	2029 (676)	6%	2274 (561)
White Female with Children Under 18	898 (755)	59%	1592 (705)
White Female Without Children Under 18	997 (721)	18%	1754 (553)
Non-White Female With Children Under 18	1043 (679)	44%	1703 (587)
Non-White Female Without Children Under 18	1260 (967)	12%	1822 (466)

TABLE 13 (continued)

B) Annual Hours worked in 1971 by the 1971 Target and Counter-part Populations

	Target Population		Counter-Part Population
Characteristics of Household Head	Average Hours Worked for Heads Who Worked At All in 1971	Proportion of Group Who Lived In Households Where Head Did Not Work in 1971	Average Hours Worked by Heads Who Worked At All in 1971
White Male	2103 (1136)	3%	2253 (665)
Non-White Male	1842 (745)	10%	2114 (646)
White Female with Children Under 18	1044 (614)	32%	1671 (812)
White Female Without Children Under 18	873 (679)	7%	1758 (586)
Non-White Female With Children Under 18	1231 (814)	46%	1458 (602)
Non-White Fema[illegible] Without Children Under 18	1306 (721)	21%	1671 (619)

Source: Panel Study on Income Dynamics

Similar results hold for 1971. In that year, a high unemployment rate increased the number of non-white male household heads who didn't work at all. But poor male heads who did work averaged 1925 hours compared to 2200 hours for their counterparts.

To summarize, poor male heads work shorter hours than their counterparts but the gap is far less than many people suppose. If, for example, all poor males looked like the men of Talley's Corner[4], I would expect them to be unemployed about one day out of every three and to report about 1000 hours of work annually. The data in Table 13 suggest nothing like that.

Among female-headed households, differences in work behavior appear more clearly. Large numbers of female heads do not work at all. Among people in poor, female-headed households in 1967, half were in households where the head didn't work. Those heads who did work averaged 1000 hours annually compared to 1600 hours for their counterparts. The data for 1971 show similar, if slightly smaller, differences.

At the beginning of this section I asked what circumstances of a poor person might change to lift him out of poverty. Certain circumstances are unlikely to change: the number of children in the family, the head's education, and so on. The head's annual hours of work was a possible candidate for change. But the data in Table 13 suggest the room for change may be limited. Many poor male-headed households are working full time already. Many poor female-headed households are working far less than full time but it remains to be seen whether working full time would lift them out of poverty. I shall return to this question, too, later in this section.

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[4] Elliot Liebow, Talley's Corner, Boston: Little Brown, 1967.

Table 14 contains data on the actual and estimated wages for household heads who worked in 1967. The estimated wage is constructed by estimating an equation of the form (1) below and applying the coefficients to an individual's characteristics.[5]

(1) Estimating Equation for an Individual's Average Annual Wage

$$\ln(W_i) = f(X_{1i}, X_{2i}, \ldots\ldots X_{7i}) + \mu_i$$

where:	W_i	is the individual's annual pre-tax earnings from labor divided by his total hours of work.
	ln( )	refers to the natural log function
	X_1	is a set of 7 binomial dummies referring to age.
	X_2	is a set of 7 binomial dummies referring to education.
	X_3	is a set of 4 binomial dummies referring to the region of residence.
	X_4	is a set of three binomial dummies referring to the distance from the individual's residence to a city of 50,000 or more.
	X_5	is a binomial dummy which is 1 if the person has any work-limiting disability.
	X_6	is a binomial dummy which is 1 if the person belongs to a union (males only).
	X_7	is a binomial dummy which is 1 if the person is a farmer (males only).
	μ_i	is a stochastic error term associated with the individual.

The equation (1) above is estimated separately for white male household heads, non-white male household heads, white female household heads and wives, and non-white female household heads and wives.

---

[5] The estimating equations themselves appear in Appendix B along with sample calculations of estimated wages. The regression form is adopted from the work of Robert Hall. See: Robert E. Hall, "Wages, Income and Hours of Work in the U.S.," Chapter 3 in Glen G. Cain and Harold W. Watts, eds., Income Maintenance and Labor Supply, Chicago, Rand McNally, 1973.

TABLE 14

AVERAGE ACTUAL HOURLY WAGES AND AVERAGE ESTIMATED HOURLY WAGES FOR HOUSEHOLD HEADS WHO WORKED IN 1967

(figures in parentheses are standard deviations)*

	Target Population		Counterpart Population	
Characteristics of the Household Head	Actual Wage	Estimated Wage	Actual Wage	Estimated Wage
White Male Household Heads	$1.28 (.61)	$2.20 (.79)	$3.82 (2.17)	$3.49 (1.00)
Non-white Male Household Heads	$1.33 (.71)	$2.03 (.77)	$2.96 (1.86)	$2.81 (1.04)
White Female Household Heads with Children Under 18	$1.13 (.45)	$2.18 (.48)	$2.55 ($2.20)	$2.16 (.67)
White Female Household Heads Without Children Under 18	$1.05 (.50)	$2.00 (.59)	$2.79 (1.76)	$2.35 (.81)
Non-White Female Household Heads with Children Under 18	$1.09 (.37)	$1.30 (.56)	$2.16 (.46)	$1.62 (1.10)
Non-White Female Household Heads Without Children Under 18	$1.07 (.49)	$1.37 (.351)	$2.07 (1.16)	$1.95 (.98)

Source: Panel Study on Income Dynamics

*Standard deviations of the estimated wages for various subgroups should not be confused with the standard error of Equation 1.

By its construction, the estimated wage takes account of many of the characteristics I have discussed previously: a person's age, his education, his place of residence and so on. It offers a useful way of investigating the meaning of "low wages." To say that someone receives a low wage has two interpretations: that he receives a low wage relative to some national average, or that he receives a low wage relative to most people who have characteristics similar to his own. In the work that follows, both meanings will be important.

The data in Table 14 show that by both interpretations, household heads in the target population work for low wages. Average actual wages for male heads in the target population are about 35% of actual wages of male heads in the counterpart population. _A priori_ one might explain this result by saying that male heads in the target population were poorly educated, they live in rural areas, and so on. But the data also show that male heads in the target population receive average wages that are 40% below their estimated wages, estimates that take these factors into account. Female household heads in the target population show similar patterns. By contrast, household heads in the counterpart population receive wages that on average exceed their estimated wages.

How does one interpret the difference between actual and estimated wages? Two interpretations are possible. Start with the fact that wage equations like Equation (1) generally explain only 30-40% of the variation in observed wages and so prediction errors are quite large. In this context, an error of prediction may reflect a one time event, a piece of bad luck or good luck that befalls an individual in one year and has no bearing on his wage in the next year. If this were the case, I would expect household heads in the target population to return to their estimated wages in subsequent years. Alternatively, a prediction error can reflect some unobserved characteristic of the individual: an unusually high motivation, a prison record, or some other variable that is not explicitly recorded in the data. In this case, I would expect individuals to stay systematically above or below their estimated wages over time. I will return to this point at the end of this section.

Summarizing the Data -- The Causes of Poverty

At this point, I want to summarize the data just presented in a series of experiments. Earlier in this section, I asked several questions: How many families would be counted as poor if they had to support only two children? How many female-headed households would be removed from poverty if their household heads worked full time? These kinds of questions are part of a larger idea. Many authors have suggested that poverty is "caused" by three factors: low hours, low wages, and large numbers of children. To measure the extent of this causation, I will ask a set of "what-if" questions that appear below. The answers to these questions will provide a convenient way of organizing the data in Tables 9-14.

> ### The Impact of Low Hours in Causing Poverty
>
> Consider a poor household and, in particular, consider the labor income of its head. Suppose the head had worked for his or her reported actual wage, but had worked for a "normal" number of hours rather than his or her reported hours. Would the resulting change in income be enough to lift the household out of poverty?
>
> ### The Impact of Low Wages in Causing Poverty
>
> Consider a poor household and consider the labor income of its head. Suppose the head had worked for his or her reported hours, but had worked for a "normal" wage rather than his or her reported wage. Would the resulting change in income be enough to lift the household out of poverty?
>
> ### The Impact of Large Numbers of Children in Causing Poverty
>
> Suppose we construct a new poverty standard for a household based on its actual number of adults and two children (actually,two children or the true number of children if the true number is less than two). Suppose we classify a household as "poor" only if its income does not exceed this new poverty standard. How many households would still be poor?

In the first two experiments, I hold constant the earnings of household members other than the head. To test the impact of aggregate economic conditions, I will run the experiments twice: once for 1967, a good year, and once for 1971, a bad year.

The experiments are clear in outline but I need to fill in some details.

What do I mean by "normal" hours? For simplicity, I define normal hours for each race-sex group to be the mean hours worked by all male heads in that group as shown below in Table 15.

TABLE 15

Normal Hours Worked as Used in the Experiments

	1967	1971
White Male Heads	2297 hours/year	2229 hours/year
White Female Heads	2297	2229
Non-White Male Heads	2194	2041
Non-White Female Heads	2194	2041

Source: Panel Study on Income Dynamics

Some readers may object that it is unreasonable to conduct an experiment where female heads work full time, but I ask them to bear with me.

What do I mean by a "normal" wage? Here, I will use a person's estimated wage to represent their normal wage. I do not imply by this that every individual can be expected to return to his or her estimated wage in the near future. Rather, I use the estimated wage because it provides standard for a normal wage that is less arbitrary than most alternatives.

In these tabulations, how do I treat household heads who do not work at all? I don't. These heads report no wage and no hours and so under either of the first two questions, their labor income will remain at zero. This solution seemed more reasonable than some arbitrary assignment of wages and hours that would not be strictly equivalent to the data used for other households.[6]

The results of the experiments are reported in Table 16. Note that the experiments involve all households in the target and counterpart populations. Consequently, it is possible for people to fall into poverty as well as leave it.[7]

The results of Table 16 can be summarized in four points.

Low Wages Make a Difference for Men

> If males were working for their estimated wages rather than their reported wages, poverty in male-headed households would have been reduced by 30-40%.

Low Hours Do Not Make a Difference for Men

> If male household heads were working for normal hours (as defined in Table 15) rather than their actual hours, the amount of poverty in male headed households would be reduced only slightly.

Neither Low Wages Nor Low Hours Make a Difference for Women

> The substitution of either an estimated wage or normal hours leaves the amount of poverty in female-headed households unchanged.

Children Make a Difference for All Households

> If a household was classified as poor only when its income was inadequate to support a family of two children, the number of people in poverty would be reduced by 40%.

I can best explain the results by discussing male and female heads separately. Think of an individual's earnings as the product of (reported

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[6] A separate, more technical question concerns wages and hours for farmers. Farmers work extremely long hours and so appear to work for extremely low wages (i.e., a normal income divided by a large number of annual hours). The estimated wage compensates for this by including a dummy variable for farmers. But the definition of normal hours in Table 15 would have all farmers working for (what is for them) very low hours and very low actual wages. To get around this problem, I have defined normal hours to be actual hours if the household head reports his occupation as farmer, and the appropriate number in Table 15 if the person is not a farmer.

[7] For example, if a household head is working particularly long hours and is actually slightly above the poverty line (i.e., in the counterpart population), assigning him normal hours from Table 15 may reduce his income enough to bring him into poverty.

TABLE 16

THE SIZE OF THE TARGET POPULATION REESTIMATED UNDER THE WAGES EXPERIMENT THE HOURS EXPERIMENT, AND THE CHILDREN EXPERIMENT FOR 1967 & 1971*

(all numbers in millions of people)

People Classified by the Characteristics of Their Household Head

1967	White Males	Non-White Males	White Females	Non-White Females	TOTAL
67 Target opulation	5.02 million	4.70 million	2.45 million	4.18 million	16.35 million
age Experi- ent	3.22 million	3.32 million	2.82 million	4.74 million	14.35 million
ours Experi- ent	4.88 million	4.45 million	2.84 million	3.86 million	15.73 million
hildren xperiment	3.01 million	1.74 million	1.95 million	3.43 million	10.14 million
1971					
971 Target opulation	5.24 million	3.03 million	2.76 million	4.28 million	15.34 million
age Experi- ent	2.36 million	2.45 million	2.27 million	4.49 million	11.59 million
ours Experi- ent	4.45 million	2.93 million	2.91 million	4.11 million	14.40 million
hildren xperiment	2.60 million	1.61 million	1.95 million	3.67 million	9.83 million

ource: Panel Study on Income Dynamics

wages x reported hours worked). The hours experiment substitutes a mean number of hours for reported hours. The wage experiment substitutes an estimated wage (a conditional mean) for the reported wage rate. A typical male head in the target population will have reported hours and reported wages that are both below these means, but the difference for wages will be larger. In 1967, a typical male head worked about 85% of normal hours but he worked for a wage that was only 60% of his estimated wage. In this context, a return to estimated wages will produce a bigger increase in earnings than a return to normal hours.

The case of female household heads differs from that of males because the distribution of female wages is relatively lower. The 1967 mean reported wage for all non-white male heads (poor and non-poor) was $2.70. The mean for all female heads was about $1.70 and many women earned less. In 1967, a woman with four children could work at $1.70 for 2100 hours and still be several hundred dollars below the poverty line.

Moreover, the distribution of expected wages is much tighter than the distribution of actual wages.[8] When I substitute a woman's estimated wage for her actual wage, women who are working below the estimated wage will have increased earnings but earnings may not increase enough to be out of poverty. Other women may be out of poverty because they were actually receiving more than their estimated wage. For them, substituting estimated wages for actual wages constitutes a reduction in the wage rate which will cause them to drop below the poverty line. This accounts for the small increase in female-headed poverty in the wages experiment.

---

[8] This can be seen by comparing the standard deviations of actual wages to the much smaller standard deviation of estimated wages in Table 14.

Summarizing the Results -- How Permanent is Poverty?

I began this section by asking why people are poor in the first place and what among their circumstances might change to lift them out of poverty. The material just presented gives some crude answers to these questions.

Poor male-headed families are concentrated in rural areas and have very low levels of education. These two factors predict they should earn low wage rates and, in fact, their wage rates are even lower than one would predict. Though they work on average close to full time, their low wage rates produce insufficient income to keep them above the poverty standard. In part this is due to their large families that result in high poverty standards. But 60% of the people in poor male-headed households do not have enough income to support a two-child household above poverty.

Poor female household heads have fewer distinguishing characteristics. They are not as concentrated in particular regions. They do not have dramatically low levels of education. But a relatively large proportion of them do not work. And the numbers suggest that the ones who do work earn low wages -- wages so low that even if they were to work full time, their incomes would not be sufficient to lift their households out of poverty. Again, some of this problem arises from large families. But here too, reducing families to two children would only reduce the problem by 25-30%.

Which of these circumstances might change to lift a family out of poverty? There are, of course, many possibilities for change beyond those just discussed. A female head might remarry. Or a wife might enter the labor market to supplement her husband's income. I will look at these items in more detail in the next section.

Among the factors just explored, the most likely candidates for change are male wage rates. Male hours have relatively little room for change -- they are working close to full time already. Female wages and female hours both have room for change. But the position of female heads in the labor market is relatively weak and it is unlikely that either kind of change would lift the household out of poverty.

Can I reasonably expect a man's wage to increase. I can to an extent. Wage increases potentially can come from two sources. The first is a natural life cycle of earnings. The wage estimates in Appendix B suggest that both black and white male wage rates increase through age 44 (though fairly slowly for blacks). The data in Table 10 show that more than half of all poor male household heads are less than 40 and so wage increases might arise from that source.

A second source would be incidents of good luck or, more properly, removal of the bad luck that caused actual wages to be below estimated wages. But this luck is plausible only if the difference between actual and estimated wages reflect truly random events: that is, they don't reflect unobserved characteristics like bad motivation, alcoholism, particularly depressed areas of residence, and so on. I investigate this question in Appendix C. My conclusions can best be understood by referring back to Table 14.

Consider an individual white, male, household head whose actual wage in 1967 was $1.28 and whose estimated wage was $2.20 -- a person whose individual characteristics equaled the averages for all poor white males presented in Table 14. Is it statistically plausible that $2.20 could be this person's normal or expected wage? Yes, it is. A similar conclusion holds for all other race-sex groups.

On the other hand, consider a group of white male heads (in this case, 57 observations) whose average actual wage was $1.28 and whose average estimated wage was $2.20 -- that is, the group of poor white male heads contained in Table 14. Is it plausible that $2.20 represents the average normal wage or average expected wage for the whole group? The answer is no. Similar answers hold for each of the other race-sex groups.

The conclusions themselves are detailed in Appendix C. They indicate what common sense suggests: that at least some of the people observed in poverty were caught in a particularly bad year, a year in which their wages were unusually depressed. Correspondingly, it is reasonable to expect that some of the people in poverty will return to their higher estimated wages in the future. But while this conclusion is reasonable for some individuals among the poor, it is not a reasonable conclusion for the poor as a whole.

Having said all this, the question remains: How do people leave poverty? I turn to this question next.

IV. How Do People Cross the Poverty Line -- An Analysis of 1967-68

How does an individual cross the poverty line? Near the end of the preceeding section, I presented a short list of factors that might be involved:

- The head of the individual's household might change. Since the household head is the assumed principal earner, a change in head may produce a sharp change in household income. Such changes might occur because the individual is in a female-headed household where the head gets remarried. Alternatively, the individual herself might leave her parents' household to form a household of her own, and so on.
- The head of the individual's household might experience increased earnings through increased hours worked, increased wages, or both.
- Household members other than the head might experience increased earnings. Members of the individual's household might receive increased income through rentals, gifts, and other non-labor sources of income.[1]

I assess the relative importance of these factors in this section. My focus will be on members of the 1967 target population who crossed the poverty line in 1968.

Note that I have described each factor from the perspective of the individual rather than the household. Household composition changes constantly over time. Divorce, remarriage, and relatives entering and leaving all serve to make the household an imprecise concept even over a period as short as two years. Dividing the sample into individuals and asking what happens to them avoids this imprecision.

My analysis will proceed in three steps. I will begin by grouping the 1967 target population by their positions in their 1967 households: male heads, wives, female heads, young children and so on. I then will tabulate the rate at which each group crossed the poverty line in 1968. As part of these tabulations, I will show the relative importance of changes in the household among people who leave poverty.

---

[1] Other factors are possible but they do not appear to be too frequent. Changes in transfers are minimized by the exclusion of welfare payments from income used in this paper. Another factor, frequently suggested to me, is the case of the family who loses a member and so becomes non poor because its constant income is now compared to a lower poverty standard. I ran some tabulations to test specifically for this case and found that it described at most 1.5% of all people who crossed the poverty line between 1967 and 1968.

Next I will investigate those movements across the poverty line that did not involve changes in household head. Here I will look for the relative importance of changes in the head's hours worked, changes in the head's wage and changes in the earnings of others.

Finally, I will condense the previous material in two simple econometric modelsthat attempts to predict who, among the 1967 target population, will be out of poverty in 1968. Recall from SectionII (Table 6) that between 1967 and 1968, 31% of the 1967 target population crossed the poverty line. Alternatively put, a person drawn at random from the 1967 target population had a probability of .31 of being non-poor in 1968. But we know that this probability was not even across all individuals. Common sense suggests a child in a male-headed household with income just below the poverty line had a better chance of leaving poverty next year than a child in a female-headed household with no earned income. Correspondingly, the probability of .31 is actually the mean of a distribution of individual probabilities of leaving poverty in 1968. I will use the econometric models to construct this *ex ante* distribution of probabilities. This distribution will give a clearer picture of the short run dynamics of poverty.

I will conclude the section with a summary of findings.

Movements Out of Poverty and Changes in Household Head

What is the chance an individual in the 1967 target population left poverty in 1968? And if he or she did leave, what is the chance that the move was involved with a change in household head?

I expect *a priori* that the answers to both questions depend upon the person's position in the household. A male household head will almost certainly remain the head of any new unit he enters. A female household head may remain a head or may remarry. These possibilities for change suggest dividing the target population into the following classification:

Classification of the 1967 Target Population for Tabulating Movements Out of Poverty

(a) Male household heads.

(b) Males who are not household heads, including male children, resident uncles, and so on.

(c) Wives.

(d) Female household heads with children under 18.

(e) Female household heads without children under 18.

(f) Females who are neither wives nor household heads, including female children, resident grandmothers, and so on.

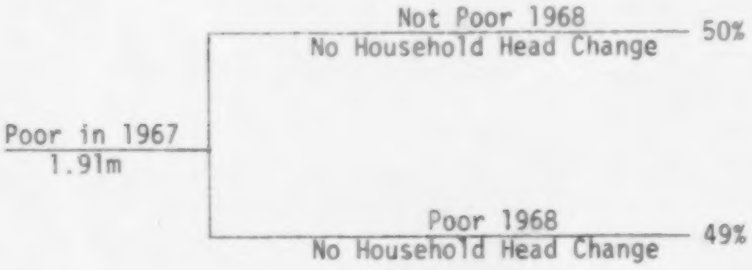
Groups (b) and (f) will be further subdivided by their age and by the sex of their household head.

Figures 1-8 use this classification to tabulate 1968 movements across the poverty line for the 1967 target population. The tabulations are summarized in Table 17 at the end of the figures.

The data in the figures make three points. Within a given year, changes in household head account for a relatively small proportion of movements across the poverty line. The summary data in Table 17 show that between 1967 and 1968, 4.99 million people in the 1967 target population left poverty. But of these, only .36 million, or 7%, experienced a change in household head. This proportion extends to almost every subgroup including female household heads with children where the total number leaving poverty was five times the number leaving poverty through remarriage.

FIGURE 1

MOVEMENTS OUT OF POVERTY FOR MALE HEADS OF HOUSEHOLD*


Not Poor 1968
No Household Head Change
50%
Poor in 1967
1.91m
Poor 1968
No Household Head Change
49%

*In Figures 1-8, branches involving less than 1% of the group in question are omitted.

FIGURE 2

MOVEMENTS OUT OF POVERTY FOR MALE NON-HEADS OF HOUSEHOLD WHO LIVED IN A MALE-HEADED HOUSEHOLD IN 1967

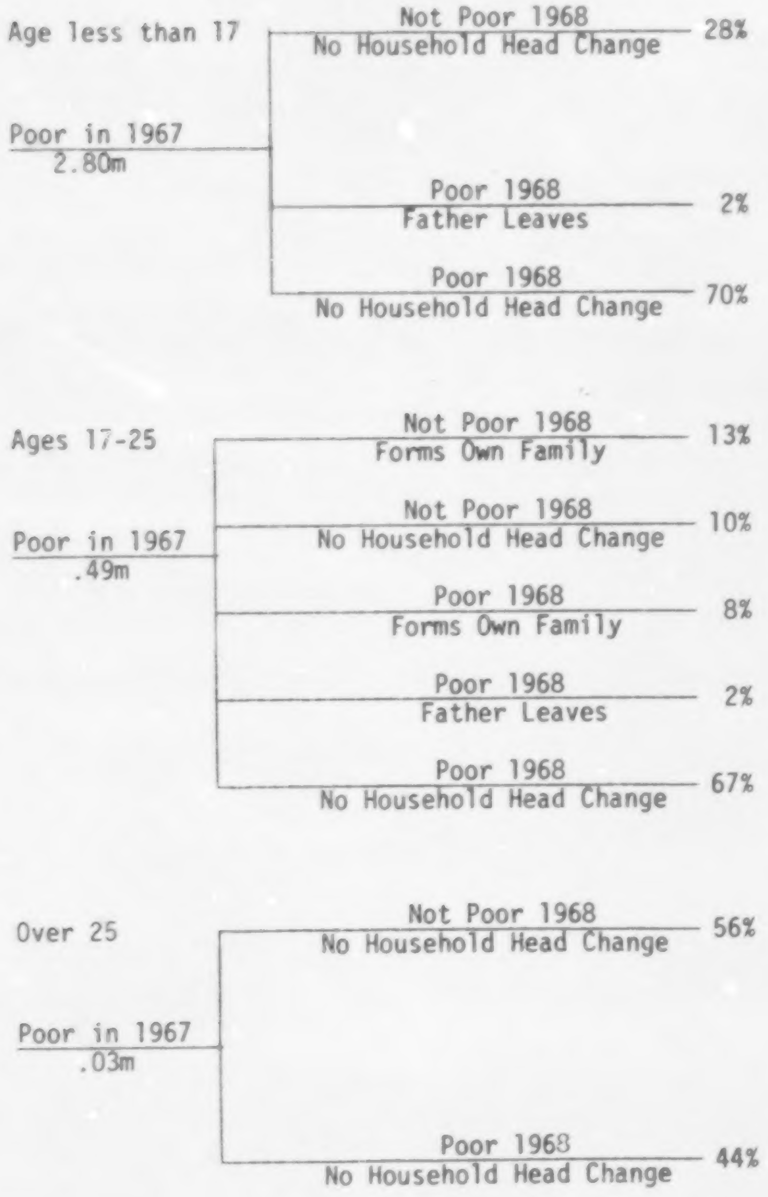

Age less than 17
Poor in 1967
2.80m
Not Poor 1968
No Household Head Change
28%
Poor 1968
Father Leaves
2%
Poor 1968
No Household Head Change
70%
Ages 17-25
Poor in 1967
.49m
Not Poor 1968
Forms Own Family
13%
Not Poor 1968
No Household Head Change
10%
Poor 1968
Forms Own Family
8%
Poor 1968
Father Leaves
2%
Poor 1968
No Household Head Change
67%
Over 25
Poor in 1967
.03m
Not Poor 1968
No Household Head Change
56%
Poor 1968
No Household Head Change
44%

FIGURE 3

MOVEMENTS OUT OF POVERTY FOR MALE NON-HEADS OF HOUSEHOLD WHO LIVED IN A FEMALE-HEADED HOUSEHOLD IN 1967

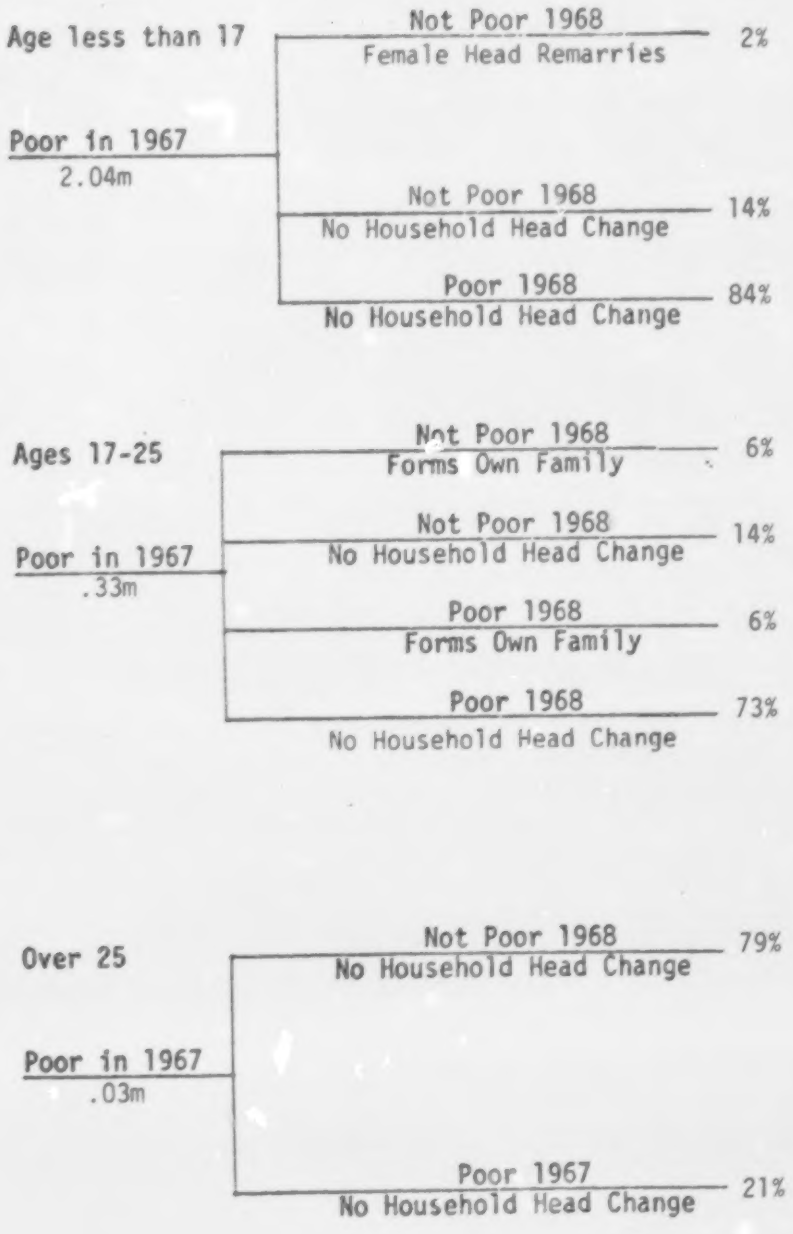

Age less than 17
Poor in 1967
2.04m
Not Poor 1968
Female Head Remarries
2%
Not Poor 1968
No Household Head Change
14%
Poor 1968
No Household Head Change
84%
Ages 17-25
Poor in 1967
.33m
Not Poor 1968
Forms Own Family
6%
Not Poor 1968
No Household Head Change
14%
Poor 1968
Forms Own Family
6%
Poor 1968
No Household Head Change
73%
Over 25
Poor in 1967
.03m
Not Poor 1968
No Household Head Change
79%
Poor 1967
No Household Head Change
21%

FIGURE 4

MOVEMENTS OUT OF POVERTY FOR WIVES

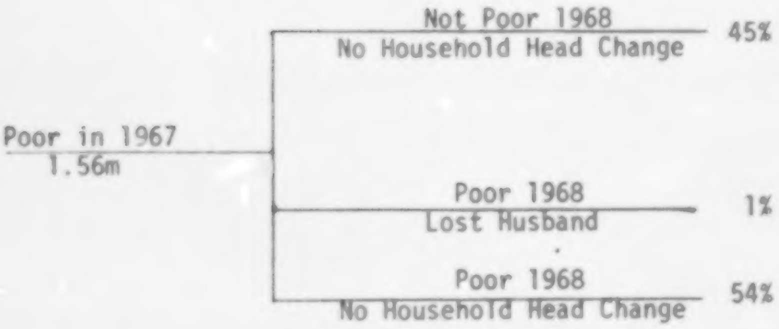

Poor in 1967
1.56m
Not Poor 1968
No Household Head Change
45%
Poor 1968
Lost Husband
1%
Poor 1968
No Household Head Change
54%

FIGURE 5

MOVEMENTS OUT OF POVERTY FOR FEMALE HEADS OF HOUSEHOLD WITH CHILDREN UNDER 18

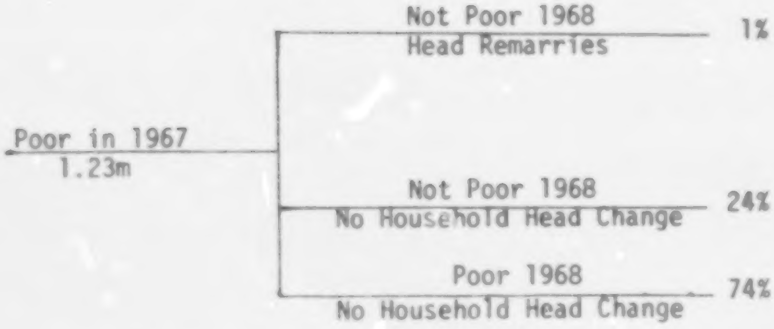

Poor in 1967
1.23m
Not Poor 1968
Head Remarries
1%
Not Poor 1968
No Household Head Change
24%
Poor 1968
No Household Head Change
74%

FIGURE 6

MOVEMENTS OUT OF POVERTY FOR FEMALE HEADS OF HOUSEHOLD WITHOUT CHILDREN UNDER 18

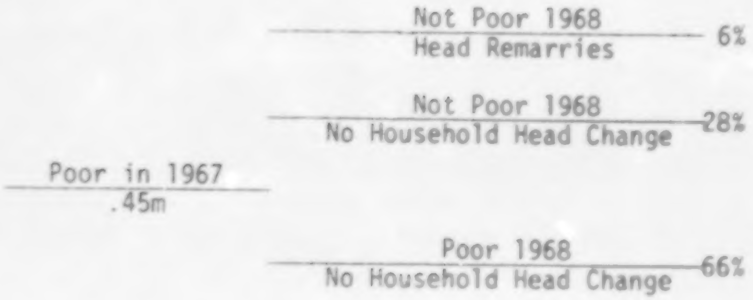

Not Poor 1968
Head Remarries
6%
Not Poor 1968
No Household Head Change
28%
Poor in 1967
.45m
Poor 1968
No Household Head Change
66%

FIGURE 7

MOVEMENTS OUT OF POVERTY FOR FEMALES WHO ARE NEITHER WIVES NOR FEMALE HEADS AND WHO LIVED IN MALE-HEADED HOUSEHOLDS IN 1967

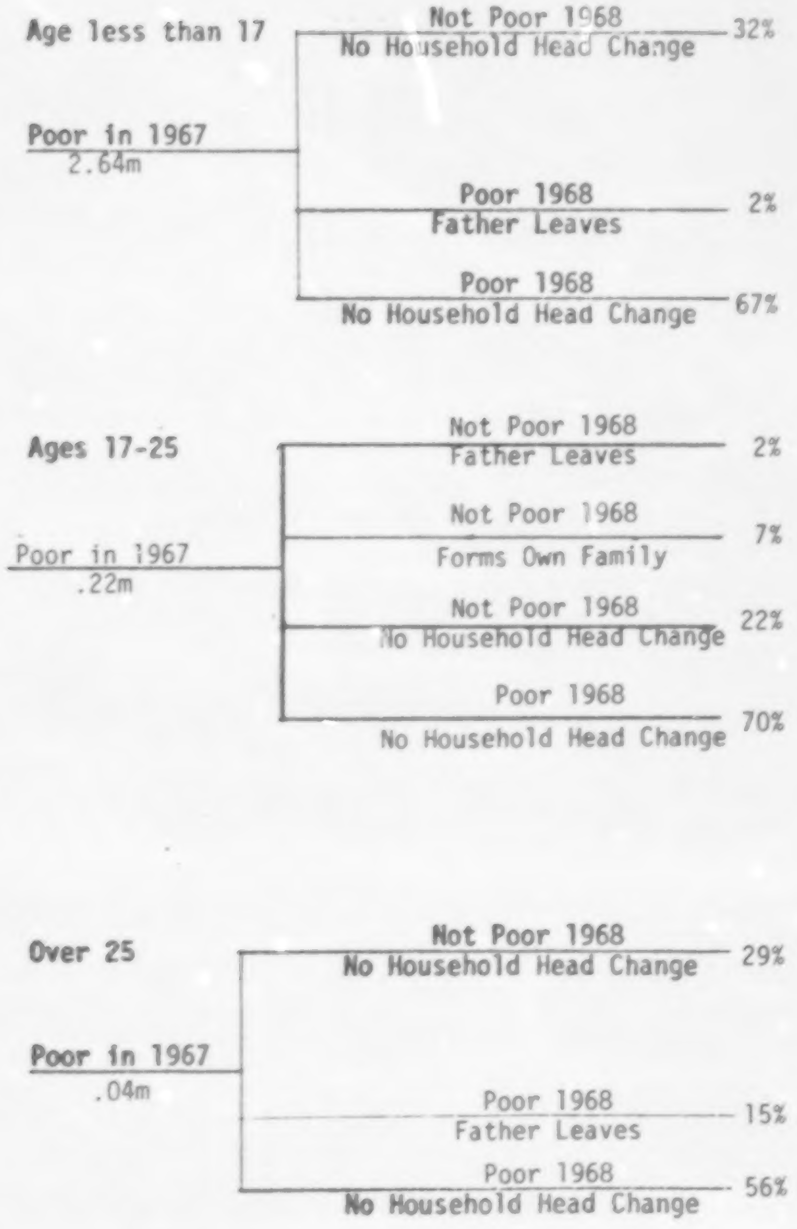
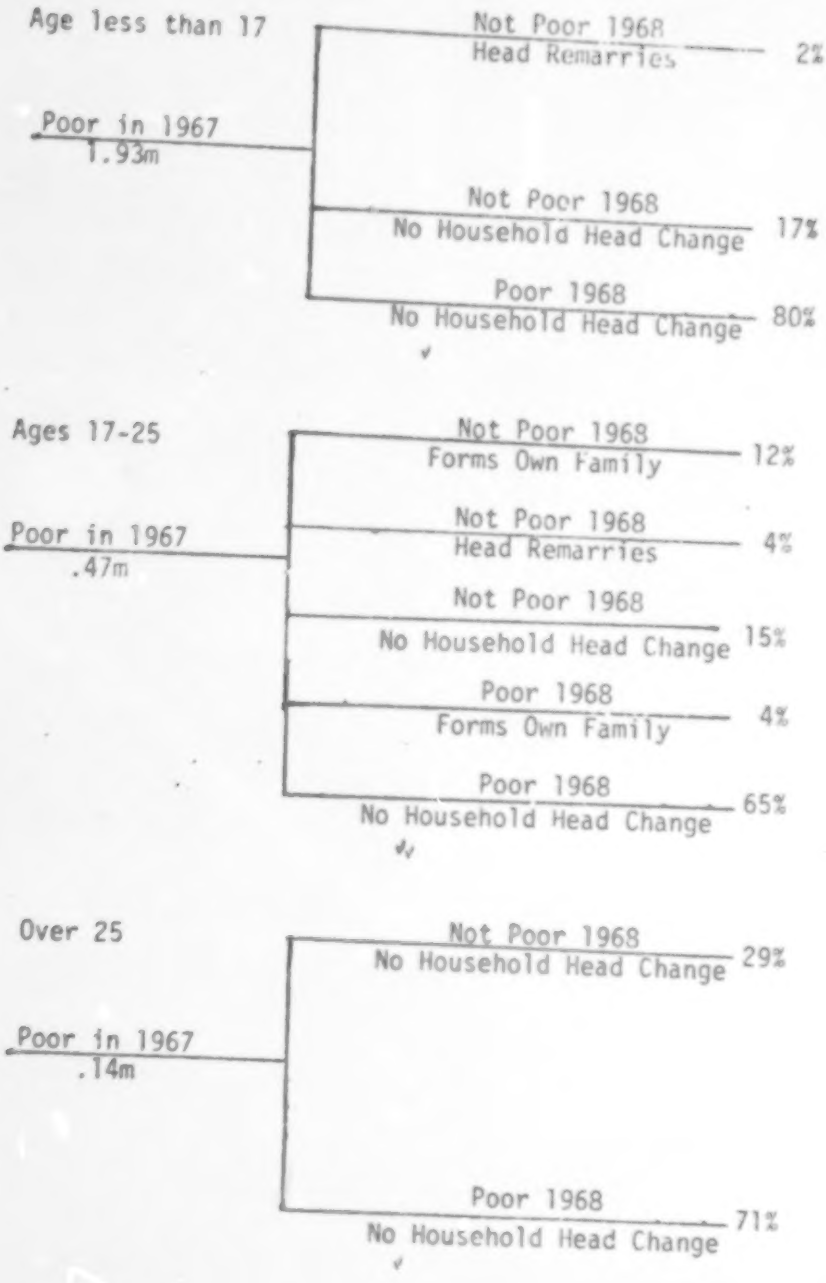

Age less than 17
Poor in 1967
2.64m
Not Poor 1968
No Household Head Change
32%
Poor 1968
Father Leaves
2%
Poor 1968
No Household Head Change
67%
Ages 17-25
Poor in 1967
.22m
Not Poor 1968
Father Leaves
2%
Not Poor 1968
Forms Own Family
7%
Not Poor 1968
No Household Head Change
22%
Poor 1968
No Household Head Change
70%
Over 25
Poor in 1967
.04m
Not Poor 1968
No Household Head Change
29%
Poor 1968
Father Leaves
15%
Poor 1968
No Household Head Change
56%

FIGURE 8

MOVEMENTS OUT OF POVERTY FOR FEMALES WHO ARE NEITHER WIVES NOR FEMALE HEADS AND WHO LIVED IN FEMALE-HEADED HOUSEHOLDS IN 1967


Age less than 17
Poor in 1967
1.93m
Not Poor 1968
Head Remarries
2%
Not Poor 1968
No Household Head Change
17%
Poor 1968
No Household Head Change
80%
Ages 17-25
Poor in 1967
.47m
Not Poor 1968
Forms Own Family
12%
Not Poor 1968
Head Remarries
4%
Not Poor 1968
No Household Head Change
15%
Poor 1968
Forms Own Family
4%
Poor 1968
No Household Head Change
65%
Over 25
Poor in 1967
.14m
Not Poor 1968
No Household Head Change
29%
Poor 1968
No Household Head Change
71%

A SUMMARY OF 1967-68 MOVEMENTS OUT OF POVERTY FOR THE 1967 TARGET POPULATION

	Total In Group	Not Poor in 1968 With Change In Household Head	Not Poor in 1968 With No Change In Household Head	Poor in 1968 With No Change In Household Head	Poor in 1968 With Change In Household Head	Rate of Crossing the Poverty Line
Male Household Heads	1.91m	-	.94m	-	.97m	49%
Male Non Heads						
Age 0-16						
In Male-Headed Households	2.08m	-	.79m	.05m	1.96m	28%
In Female-Headed Households	2.04	.03m	.29m	-	1.72m	16%
Age 17-25						
In Male-Headed Households	.49m	.07m	.05m	.04m	.33m	24%
In Female-Headed Households	.33m	.06m	.05m	.02m	.20m	33%
Age Over 25						
In Male-Headed Households	.02m	-	.01m	-	.01m	50%
In Female-Headed Households	.03m	-	.02m	-	.01m	66%
Wives	1.56m	-	.71m	.01m	.84m	46%
Female Heads With Children Under 18	1.24m	.02m	.30m	-	.92m	26%
Female Heads Without Children Under 18	.45m	.03m	.13m	-	.29m	36%
Females Who Are Neither Wives Nor Female Heads						
Age 0-16						
In Male-Headed Households	2.64m	-	.84m	.04m	1.76m	32%
In Female-Headed Households	1.93m	.06m	.32m	-	1.55m	20%

TABLE 17 (continued)

	Total In Group	Not Poor in 1968 With Change In Household Head	Not Poor in 1968 With No Change In Household Head	Poor in 1968 With No Change In Household Head	Poor in 1968 With Change In Household Head	Rate of Crossing the Poverty Line
Female Heads (continued)						
Age 17-25						
In Male-Headed Households	.22m	.02m	.05m	-	.15m	32%
In Female-Headed Households	.47m	.07m	.07m	-	.31m	30%
Age Over 25						
In Male-Headed Households	.04m	-	.01m	.01m	.02m	25%
In Female-Headed Households	.14m	-	.04m	-	.10m	29%
TOTALS	16.35m	.36m	4.63m	.19m	11.15m	31%

Next, different kinds of households leave poverty at very different rates. A male household head picked at random from the 1967 target population had a 49% chance of not being poor in 1968. The corresponding chance for wives was similar. But the chance for female household heads without children was 36% and the chance for female heads with children was 26%. These figures reemphasize the difficulty of female household heads earning income in excess of the poverty line.

Finally, small families are more likely to leave poverty than large ones. The reader can see this by comparing the chances of leaving poverty for household heads and for their children. A male household head had a 49% chance of leaving poverty in 1968. But children under 16 in male-headed households had only a 30% chance of leaving poverty. Similar results hold for children in female-headed households. Both results suggest that households who left poverty had smaller than average numbers of children. The result is not surprising. More children imply a larger official poverty standard and a larger income if the family is to live at a level above poverty.

In an earlier paper, I speculated that many movements out of poverty might arise from changes in household head and, correspondingly, discontinuous changes in family income.[2] I argued that if these discontinuous changes were frequent, economists' emphasis on marginal tax rates of income maintanance programs might be misplaced.[3] Rather than make marginal adjustments to tax rates, people might jump over the range of the tax rate entirely when they reformed their households. The data in Table 17 suggest that this argument was incorrect and changes in household head influence only a small proportion of people who annually cross the poverty l

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[2] See my "Discontinuous Behavior and Income Maintenance," paper presented at the Western Economic Association Meetings, Las Vegas, Nevada, June 11, 1974.

[3] A different argument for downplaying tax rates arises from the findings of the New Jersey negative income tax experiment which found no statistical association between the magnitude of the tax rate and individual labor supply decisions. See Albert Rees and Harold W. Watts, "An Overview of the Labor Supply Results," in Joseph A. Pechman and P. Michael Timpane (eds.), Work Incentive and Income Guarantees, The New Jersey Negative Income Tax Experiment, Washington, D.C., The Brookings Institution, 1975, pp. 60-87.

Movements Out of Poverty - Households Who Keep Their Heads

When a father leaves his wife and children, or when a female household head remarries, we expect a sharp change in household income. But how do households cross the poverty line when they retain the same individual as head?

The material I have presented so far contained several propositions:

- The "what-if" experiments in Table 16 suggested that male headed households were more likely to leave poverty than female headed household. This proposition was confirmed by the data in Figures 1, 4 and 5.
- The "what-if" experiments also suggested that male heads would leave poverty primarily through changes in wages, rather than changes in hours. This proposition remains to be tested.
- The data summarized in Table 17 indicated that households who cross the poverty line have fewer children on average than households who remain in poverty.

There are a number of other questions one might ask. The experiments in Table 16 involved only changes in the head's earnings. But among households who leave poverty, how important are the earnings of wives? Of other household members? How important are changes in income not associated with labor such as private transfers, rental income and so on. More generally, does crossing the poverty line involve a significant change in income or does it involve an increase of just a few dollars?

To answer these questions, it is necessary to look at those households in the 1967 target population who had the same household head in 1967 and 1968. Income and family size data for these households are contained in Table 18. The households themselves are tabulated by the race and sex of the household head and subdivided into two groups: target population households who remained poor in 1968 ("stayers"), and target population households who left poverty in 1968 ("movers").

Since Table 18 contains only 1967 data, it is useful to ask whether the data give any clues that point to those families who moved out of poverty in the following year. The only consistent answer seems to be family size. Across all race-sex groups, families who stayed in poverty average three children per household more than families who left.

In most other dimensions movers and stayers are similar. Their pre-welfare cash incomes are about equal. The head's earnings are equal among male headed households. Among female headed households, the heads of stayers earned more in 1967 than the heads of movers. Stayers had more welfare income than movers though this is due, at least in part, to their larger numbers of children. Movers had higher 1967 ratios of pre-welfare income to the poverty standard, but this too is due to movers' smaller family size.

One other item in Table 18 deserves mention. The data show a movement out of poverty involves a significant change in income, even for a family who retains the same head. All movers and all stayers had incomes that increased in 1968. But stayers averaged a $1,000 increase while movers averaged a $3,000 increase.

Where did this $3,000 increase come from? Table 19 gives data on the sources of income change for target population households who left poverty in 1968 - the movers of Table 18. The data for male headed households gives strong support to the propositions derived from the "what-if" experiments in Table 16.

TABLE 18

1967 SOURCES OF INCOME FOR THE TARGET POPULATION HOUSEHOLDS, WHO HAD THE SAME INDIVIDUAL AS HEAD IN 1967-68.

A. Households Headed by Males

	White Males		Non-white Males	
	Stayers	Movers	Stayers	Movers
Total Money Income Including Welfare	$ 3551	$ 2706	$ 3641	$ 2636
Welfare Income	970	37	905	115
Head's Labor Income	1981	1652	2020	1792
Wife's Income From Work	68	148	226	614
Income of Other Members	155	12	341	51
Number of Children	4.5	1.3	5.4	2.85
Ratio of Pre-Welfare Income to Poverty Standard	.57	.69	.48	.64
1967-68 Change in Pre-Welfare Income	$ 987	$ 3249	$ 859	$ 3666

B. Households Headed by Females

	White Females		Non-white Females	
	Stayers	Movers	Stayers	Movers
Total Money Income Including Welfare	$ 3036	$ 2269	$ 3277	$ 2263
Welfare Income	782	485	944	602
Head's Labor Income	1673	888	1644	968
Wife's Income From Work	--	--	--	--
Income of Other Members	98	168	329	250
Number of Children per Household	3.4	1.5	5.0	1.9
Ratio of Pre-Welfare Income to Poverty Standard	.58	.70	.44	.58
1967-68 Change in Pre-Welfare Income	$ 1626	$ 2376	$ 808	$ 2668

Source: Panel Study of Income Dynamics

The typical male headed household left poverty through a $3,400 increase in income. About two-thirds of this increase was due to an increase in the head's earnings. And the head's earnings increased primarily through higher wages rather than longer hours. Between 1967 and 1968, hours worked by these male heads increased by 20%, but their average wage increased by 65%. Other household members also had higher earnings, but their increases were a relatively small part of the household's new income.

The importance of wages in income changes is surprising only if one believes that poor male household heads usually suffer from extreme unemployment. The tabulations in Section III showed that this was not the case: most male heads in the target population worked, and they worked close to full time. In this context, a change in wage is the only way a head's earnings can increase.

The results for female heads, as expected, are more diffuse. White female heads who left poverty had wage and hours increases of 40%, but they also benefitted substantially from increased non-labor income, presumably including alimony and child support payments. Non-white female heads had wage increases of 40% while hours increased by 70%. Again, other household members increased their earnings, but these changes were relatively small.

In summary, male headed households cross the poverty line because the head finds a job at a higher wage. Female headed households cross the poverty line because the head finds a job at a higher wage and works longer hours.

Two Simple Models of Movements Out of Poverty

To this point I have described the way in which individuals in the 1967 target population left poverty in 1968. I now wish to summarize this description in two simple econometric models. The spirit of the models will be predictive:

TABLE 19

SOURCES OF INCOME CHANGE FOR TARGET POPULATION HOUSEHOLDS WHO LEFT POVERTY IN 1968 AND WHO HAD THE SAME INDIVIDUAL AS HEAD IN 1967 AND 1968

	Characteristics of Household Head			
	White Males	Non-white Males	White Females	Non-white Females
Increase in Pre-Welfare Income	$ 3241	$ 3666	$ 2376	$ 2668
Increase in Head's Earnings	2005	2773	954	1731
Increase in Wife's Income	484	835	378	551
Head's Annual Hours of Work				
1967	1603	1855	938	1031
1968	1963	2200	1305	1737
Head's Average Wage for Those Who Worked				
1967	$ 1.30	$ 1.21	$ 1.04	$ 1.18
1968	2.05	2.07	1.50	1.66

Source: Panel Study of Income Dynamics

Given an individual's characteristics in 1967, what is the probability that he or she will be in a non-poor household in 1968?[4] I will begin to develop the model by summarizing the material just presented.

Within a single year, few people cross the poverty line through a change in household head. Most cross the poverty line by remaining in families who keep the same head and who experience a change in income.

A household that does cross the poverty line is likely to be headed by a male and is likely to have few children (compared to other poor families). Its increased income will result primarily from higher earnings by the head who will have some increase in his hours worked and a substantial increase in his wage rate. Other household members will have higher earnings too, but their increases will be smaller than the head's.

A female-headed household may cross the poverty line, but its chances of doing so will be about half as large as a household headed by a male. Here, too, households that cross the poverty line will have relatively few children. The head's labor income will increase but the increase may result from longer hours worked rather than higher wages. And the increase may be accompanied by unearned income from private transfers and other sources. The income of other earners will increase but the size of their increase will be less than that of the head.

How can I translate this description into a model? A model for male headed households must be able to capture the changes in wages observed in Table 19. In fact, these wage changes were anticipated by the data in Table 14 that showed male heads in the target population were receiving much lower wages than one would estimate based on their personal characteristics.[5] This suggests male heads who left poverty were responding to something like a permanent income model. They were below the poverty line in 1967 because they received unusually low (for them) wages, worked unusually low hours, or both. In addition, other members of their households might have earned less than normal amounts. Conversely, the household's movement across the poverty line in 1968 represented a return toward permanent income.

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[4] Again, poverty refers to pre-welfare income below the poverty line.

A household's true permanent income cannot be observed in the short run. But it is possible to approximate permanent income as a weighted average of the household's current income and it's estimated income, the average income received by all households with similar characteristics. I have outlined such a model in Equation 2 below.

A Model to Predict Movements Across the Poverty Line for Male-Headed Households

Equation (2) $Z_{68} = f((Y/P)_{67}, (EY/P)_{68}, \text{Unemp}_{68}, \text{Unrelated}_{67})$

where: Z_{68} (= 1 if the household is above poverty in 1968 (where poverty is defined excluding welfare payments from income).

(= 0 if the household is poor in 1968.

$(Y/P)_{67}$ is the ratio of the household's 1967 income (excluding welfare payments) to its 1967 poverty standard.

$(EY/P)_{68}$ is the ratio the household's 1968 estimated income to a poverty standard which has been projected to 1968 by allowing for changes in the cost of living while assuming no changes in household composition.

Unemp_{68} is the unemployment rate in the household's county in 1968

Unrelated_{67} (= 1 if the household consisted of an unrelated individual in 1967.

(=0 if the household consisted of more than one individual in 1967.

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[5] To be correct, this statement has to take account of unobserved characteristics in the estimated wage. (See Appendix C.)

Equation (2) contains two main variables. One is the household's actual 1967 income. The other is its estimated income for 1968. Construction of the estimated income variable is sketched in Table 20 and detailed in Appendix D. Briefly, it represents an extension of the idea of an individual's wage. For both the husband and wife, I use cross section wage and labor supply fuctions to compute the households expected labor income, based on their 1967 characteristics.[6] Dividing both actual and estimated income by the household's poverty standard corrects for household size.

The model contains two other variables. One is the county unemployment rate for 1968. The aggregate tabulations in Section II indicated flows across the poverty line were influenced by the national unemployment rate. Putting the county unemployment rate in a model of individual movements across the poverty line tests this idea at the micro level. The final variable distinguishes unrelated individuals from multi-person households.

Note that with the exception of the unemployment rate, the model works from an ex ante perspective, predicting a person's 1968 poverty status from characteristics collected in 1967 questions.[7]

Equation (2) is designed to predict the income movements of male household heads. If all other household members remained with the head, the same equation would apply to them as well. There is the possibility that a head will separate from his wife in which case the children will probably remain with the mother. The data in Table 17 suggest this event is relatively infrequent in any one year, but I can

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[6] Ideally, I would like to perform a similar procedure for each earner in the household but the form of the Panel Study data makes this impossible. A data record describing a male household head contains substantial information about his and his wife's characteristics but little information about the characteristics of other household members. It does include the 1967 earnings of these other members and so I assume them to be main constant in 1968.

[7] The Panel Study did not include unemployment rates for 1967.

TABLE 20

DESCRIPTION OF THE CONSTRUCTION OF 1968 ESTIMATED INCOME BASED ON 1967 CHARACTERISTICS

a) Estimate wage equations for each race-sex group based on individuals who were in the labor force in 1968. (Independent variables are detailed in Appendix B).

b) Using the estimated wages constructed in (a), estimate a set of labor supply functions for male heads and wives who were in the labor force in 1968. (Estimating procedures are discussed in Appendeix D).

c) Take a household's reported income in 1967 and remove from it all unemployment compensation and welfare payments. Also remove from it the labor income of the head and wife (if any). Project the remainder forward to 1968 by multiplying by the rate of increase in the consumer price index.

d) Use the wage equations in (a) and the labor supply equations in (b) to estimate a labor income for the head and wife based on their 1967 characteristics.*

e) 1968 Expected Income is defined as the sum of the terms calculated in (c) and (d).

f) The 1968 estimated poverty standard is the household's 1967 poverty standard brought forward by multiplying by the rate of increase in the consumer price index, without assuming any change in the household's composition.**

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*In making these calculations, I assume that individuals age one year. But I don't "look ahead" to see whether they completed one more year of education, changed their place of residence, became disabled, or had some other characteristic change in 1968.

**The reader may ask why it is necessary to project all this forward to 1968 rather than calculate everything in 1967 estimates. There are two reasons. First, wage rates may have risen faster or slower than the cost of living between 1967 and 1968. Second, estimated hours worked for an individual of given characteristics may be different in 1967 and 1968. Both of these differences suggest that using 1968 cross section estimates will produce a different result than simply scaling up 1967 estimates by the consumer price index.

test for its presence by estimating Equation (2) separately for husbands and wives. The independent variables in each estimation will be the same-- the household's actual 1967 income and estimated 1968 income[8] -- but the estimates will differ if abandonment in 1968 leads to the wife and children being poor while the husband is out of poverty.

Female-headed households without children under 18-- that is, households not eligible for AFDC-- should behave like male headed households and so I can use a similar model to explain their income movements. To the extent that some heads remarry, the overall probability of being non-poor in 1968 will be higher. Presumably the estimate will reflect remarriage through a larger constant term.

Female-headed families with children pose a problem because it is hard to estimate their labor supply. These heads are eligible for AFDC and so many do not work at all. Many others work full time. But relatively few work between 500 and 1500 hours. It is possible to estimate a labor supply function but the fuction will have huge standard errors:it will imply that a typical female head works 1000 hours when fact half of the heads work 2000 hours while half don't work at all.[9] At issue, then is not a female head's estimated hours, but rather the probability that she accepts welfare (and hence works relatively little during the year). After some experimentation, I have settled on the model in Equation (3) below:

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[8] The data sets are not identical because some male household heads are unmarried.

[9] I explore estimating such a supply function in Section VII.

A Model to Predict Movements Across the Poverty Line For Female Headed Households With Children.

Equation (3) $Z_{68} = F\left((Y/P)_{67}, \frac{WAGE}{WELFARE}, UNEMP_{68}, Race\right).$

Where Z_{67} $= 1$	If the household is above poverty in 1968 (where poverty is defined as excluding welfare payments from income).
$= 0$	If the household is poor in 1968
$(Y/P)_{67}$	is the ratio of the household's 1967 income (excluding welfare payments) to its 1967 poverty standard
$\left(\frac{WAGE}{WELFARE}\right)$	is the ratio of estimated income from full-time work to estimated income from AFDC without work. Income from work is construced by multiplying the woman's 1968 estimated wage by 2000 hours. Income from welfare is calculated by multiplying the 1968 average AFDC payment per person in her state by the number of people in the woman's household.
$Unemp_{68}$	is the unemployment rate in the household's county in 1968
Race $= (1$	if the woman is non-white
$(0$	if the woman is white

The variable (WAGE/WELFARE) is an estimate of what the woman might make from full time work divided by what the woman might receive from welfare without work. For a mother and three children, this number can be as low as .8 in a state like New York, and as high as 6 in a state like Mississippi. The variable decreases with family size and increases with a woman's estimated wage. Note that the variable is hypothetical. The woman's wage is an estimated wage, not a wage I observe, and so it can be calculated for all women including those who do not work. Similarly, the woman's estimated welfare payment is based on average figures for her state in 1968[10] and in calculating it I do not assume the woman actually receives welfare.

I assume that as this variable increases, the woman will find work relatively more attractive and so will have a greater probability of working full time and earning income above the poverty line. Here too, the possibility of remarriage is implicitly incorporated into the model.

These models cover most cases of income change. One case not covered is the older child who leaves his or her parent's home to form a new home. Modelling this case would require a large amount of additional computation while the data in Table 17 suggest the annual number of children making this move is quite small. For simplicity, I have decided to treat these older children like other children and assume that they remain with their households (or their mothers, if their parents separate).

Table 21 contains estimates of six models.[11] Each model is estimated on the set of 1967 households with expected incomes below 300% of the poverty standard.[12] The Panel Study contains large numbers of male headed households with this range and so I estimate Equation (2) separately for white and non-white male household heads and wives. The sample contains fewer observations on female heads and so for these estimates I pool observations on both races and add a separate variable for race.

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[10] Specifically, I use 1968 average payments for the state in which the household resided in 1967 to preserve an ex ante perspective.

[11] Because the models all involve (0-1) dependent variables, they were estimated conditional logit. To understand this formulation, let $\underline{X}$ represent a vector of independent variables, for example the set of independent variables contained in Equation 2. Let $\underline{B}$ represent a vector of estimated coefficients for these variables. Then, $\hat{P}_{68}$, the ex ante probability of not being poor in 1968, can be written:

$$\hat{P}_{68} = \frac{e^{\underline{B}'\underline{X}}}{1 + e^{\underline{B}'\underline{X}}}$$

[12] This set includes many households who were not poor in 1967. Inclusion of both poor and non-poor households in the estimation is necessary to avoid truncation bias in the estimates.

Before discussing the results, it is useful to review how the models might be wrong. A household's estimated income and its actual income may be highly correlated. If this were the case, I would expect the coefficients of both variables to have very high standard errors. Alternatively, a household's actual 1967 income might be by itself an excellent predictor of its 1968 income. In this case, the estimated income variable (and the WAGE/WELFARE variable for female heads) would not add information to the equation. Actual income would be highly significant while estimated income would be insignificant.

The estimates in Table 21 indicate these problems do not arise in most cases. Actual 1967 income is significant for all groups. Estimated 1968 income is significant for all male heads and white wives at the 5% level, and for nonwhite wives at the 10% level. The (WAGE/WELFARE) variable is significant for female heads with children at the 5% level. The major failure in estimation is female headed households without children. Here, only 1967 actual income is significant.[13]

The estimates can be best understood by considering some specific examples. Table 22 contains sample calculations for $\hat{P}_{68}$, the ex ante probability that a household would leave poverty in 1968 based on its 1967 characteristics. Part A of the table contains data for male headed households. To put the calculations in context, recall from Table 19 that male headed households in the target population had average pre-welfare income of about $2,500, and the 1967 poverty standard for an urban family of four was $3,350.

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[13] The problem for this group is multi-colinearity: actual 1967 income and 1968 estimated income are highly correlated. The problem arises because the estimated income variable for female heads involves estimating labor income for the head only. The earnings of others and non-labor sources of income like alimony are assumed constant from one year to the next. These other sources account for a relatively large proportion of household income and so produce the correlation between the two variables.

TABLE 21

Logit Estimations of $\hat{P}_{68}$, the Probability of Being in a Non-Poor Household in 1968 Based on 1967 Personal Characteristics*

(Standard errors are in parentheses)

	Characteristics of Individual					
	White Male	White** Wives	Nonwhite Male	Nonwhite Wives	Female w/o Kids	Female with Kids
Intercept	-.73 (.95)	-1.70 (.85)	-2.53 (.60)	-2.35 (.59)	-2.14 (1.60)	-2.61 (.78)
1967 $\frac{\text{Pre-welfare Income}}{\text{Poverty Standard}}$	1.60 (.35)	2.45 (.39)	2.94 (.34)	3.33 (.36)	2.95 (.59)	2.56 (.29)
1968 $\frac{\text{Estimated Income}}{\text{Poverty Standard}}$	.93 (.43)	.70 (.33)	.86 (.26)	.42 (.26)	-.20 (.56)	------
Unemployment Rate	-29.54 (9.36)	-26.19 (9.29)	-25.52 (9.46)	-25.40 (10.08)	.07 (.22)	.07 (.12)
Unrelated Individual	-1.43 (.71)	-----	.43 (.70)	-----	-----	-----
Race	-----	-----	-----	-----	.56 (.78)	-.78 (.38)
$\frac{\text{Wage}}{\text{Welfare}}$	-----	-----	-----	-----	-----	.16 (.07)
Percent non-poor in 1968	90%	87%	70%	67%	84%	46%
Percent Correctly Predicted	91%	90%	86%	85%	91%	83%
Sample Size	442	440	583	570	185	383
Likelihood Ratio Index	.66	.64	.51	.50	.64	.40

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*Each sample contains households whose 1968 estimated incomes are less than 300% of the poverty line. Poverty refers to income, excluding welfare payments, less than the government poverty standard.

**Equations estimates for wives and husbands use the same estimated and actual income variables. The estimates themselves may differ because a husband who leaves his wife and children will almost certainly be non-poor in 1968 while his wife and children may be poor.

TABLE 22

SAMPLE CALCULATIONS FOR $\hat{P}_{68}$, THE ESTIMATED EX ANTE PROBABILITY THAT AN INDIVIDUAL WOULD BE OUT OF POVERTY IN 1968 BASED ON THEIR 1967 CHARACTERISTICS*

A. Male Household Heads

Actual 1967 Household Income**	Estimated 1968 Household Income	County Unemployment Rate	$\hat{P}_{68}$ White Male Household Head 2 Children	$\hat{P}_{68}$ White Male Household Head 4 Children	$\hat{P}_{68}$ Non-White Male Household Head 2 Children	$\hat{P}_{68}$ Non-White Male Household Head 4 Children
$2500	$2615	4%	.49	.32	.33	.15
$2500	$2615	6%	.35	.21	.23	.09
$2500	$3504	5%	.48	.31	.34	.14
$3350	$3504	5%	.58	.35	.50	.19
$3350	$5256	5%	.69	.42	.60	.24

B. Wives

Actual 1967 Household Income	Estimated 1968 Household Income	County Unemployment Rate	$\hat{P}_{68}$ White Wives 2 Children	$\hat{P}_{68}$ White Wives 4 Children	$\hat{P}_{68}$ Non-white Wives 2 Children	$\hat{P}_{68}$ Non-white Wives 4 Children
$2500	$2615	4%	.41	.24	.28	.18
$2500	$2615	6%	.24	.16	.19	.10
$2500	$3504	5%	.39	.22	.30	.16
$3350	$3504	5%	.54	.28	.54	.22
$3350	$5256	5%	.62	.36	.59	.28

C. Female Household Head with Children

Actual 1967 Pre-Welfare Income	Estimated 1968 Hourly Wage	Average AFDC Payment Per Person Per Month	$\hat{P}_{68}$ White Female Household Head With Children	$\hat{P}_{68}$ Non-White Female Household Head With Children
$ 200	$1.05	$14.50	.16	.08
$ 200	$1.50	$14.50	.19	.10
$ 200	$2.00	$14.50	.22	.11
$1000	$1.50	$14.50	.31	.17
$1000	$1.50	$70.25	.21	.11
$4000***	$2.00	$14.50	.86	.73
$4000***	$2.00	$70.25	.76	.58

*Calculations based on estimates in Table 21.

**All income refers to Household income exclusive of welfare payments

***Household Not Poor in 1967

The calculations for male heads and wives indicate several conclusions:

-- Race matters. When family size, income, expected income, and the unemployment rate are all held constant, a non-white household has a significantly smaller chance of leaving poverty than a white household.

-- The unemployment rate matters. When the county unemployment rate rises from 4% to 6%, a male household heads's probability of leaving poverty is cut by one third.

-- Family size matters. Going from two to four children in a white male household decreases the probability of leaving poverty by two-fifths, all other factors constant. The corresponding figure for non-whites is three-fifths.

-- Estimated income matters. Holding other factors constant, an increase of 50% in estimated income increases the probability of leaving poverty by .07 to .10.[14]

Part C of Table 22 contains similar calculations for female heads with children. To simplify the table I have based all examples on households with three children. The welfare figure of $14.50 refers to the 1968 average AFDC payment per recipient per month in Mississippi. $70.25 is the corresponding figure for New York. Note first that all the probabilities are extremely low. Even the last two rows -- examples based on households whose 1967 incomes are above the poverty standard -- have probabilities of less than .9 of remaining out of poverty in 1968. The data indicate several other conclusions:

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[14] The data also suggest that white wives do significantly worse than their husbands. The gaps are so large - .49 for the husband versus .41 for the wife - that I am not sure I believe the result, though I have checked the computations several times. Two explanations are possible. One is a mistake in the data - a problem since the logit estimator is particularly sensitive to outlying observations. The other is that some wives were separated but still counted themselves as living in male headed households, even though they were not being supported by their husbands.

-- Race matters. Holding income and wages constant at low levels, white women have a probability of leaving poverty twice that of non-whites.

-- The wage matters a little. Holding 1967 income and welfare constant, an increase in a woman's estimated wage from \$1.05 to \$2.00 increases the probability of her leaving poverty only slightly.

-- Welfare payments matter a little. Holding other factors constant at typical values, an increase in per capita monthly welfare payments from \$14.70 to \$70.25 reduces a household's chances of leaving poverty by about .05 - .10.

The last point requires elaboration. If a 1968 welfare system had guaranteed an amount equal to the poverty standard, it would have paid about \$73.00 per person per month. Consider a mother with three children, no 1967 income (an extreme case) and an estimated wage of \$1.50/hour. If the welfare system paid \$14.50 per person per month, her probability of leaving poverty in 1968 would have been .17 if she was white and .08 if she was non-white. If welfare payments had increased to \$73.00 per person per month, the probabilities would have fallen to .11 and .05 respectively. The reduction is significant in proportional terms, but the probabilities are low to begin with and so the overall impact is not that great.

The estimates of $\hat{P}_{68}$ in Table 22 refer to individuals with selected characteristics. Using a similar procedure, I can calculate the probability of leaving poverty for each member of the 1967 target population. Figures 9 and 10 show the distributions of $\hat{P}_{68}$ for the target population, disaggregated by the race and sex of the 1967 household head.[15]

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[15] In these calculations, I assign each child the $\hat{P}_{68}$ calculated for his or her mother.

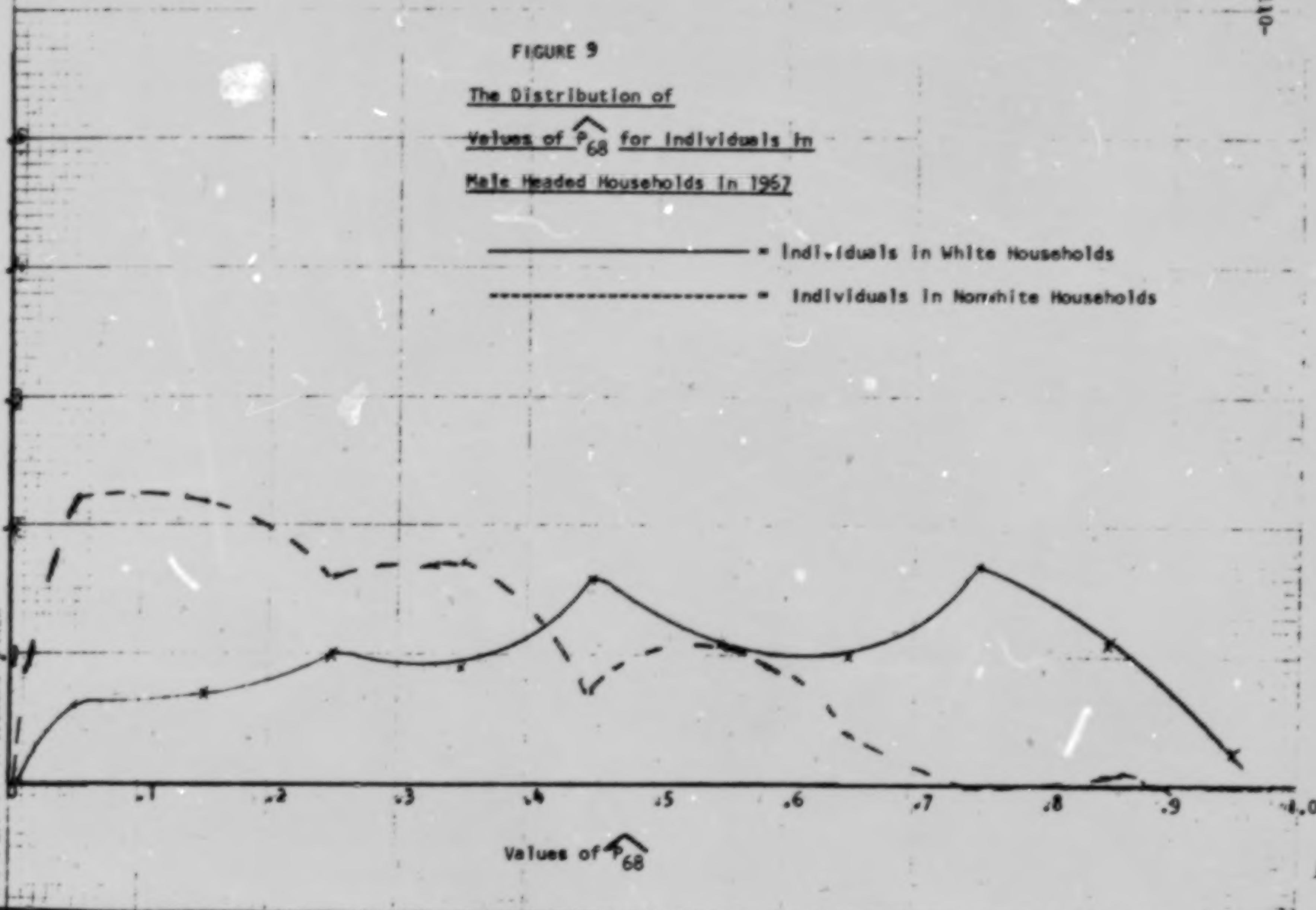
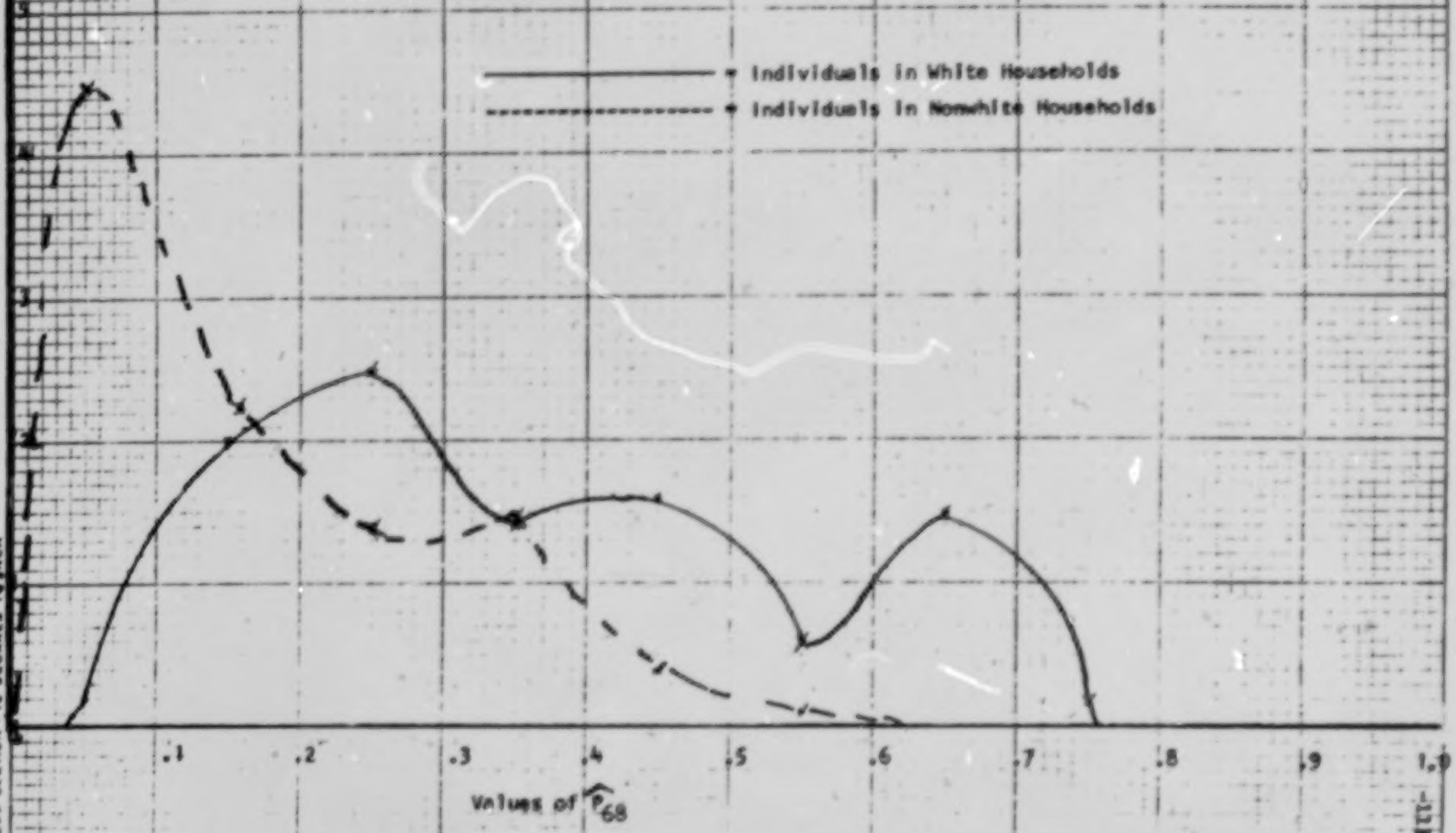


FIGURE 9

The Distribution of Values of $\widehat{P_{68}}$ for Individuals in Male Headed Households in 1967

FIGURE 10

The Distribution of Values of $\hat{P}_{68}$ for Individuals in Female Headed Households in 1967



The figures reemphasize that white and nonwhite poverty are two different matters. The grand mean of the four distributions is $\widehat{P}_{68} = .33$. That is, the models in Table 21 estimate that a person picked at random from the 1967 target population had a probability of .33 of not being poor in 1968. This estimated probability compares favorably with the actual probability of .31. But the models estimate that for a white picked at random from the target population, $\widehat{P}_{68} = .45$ while for a non-white picked at random, $\widehat{P}_{68} = .22$.

Where does this difference come from?

-- Family structure. Within the target population, one out of every three whites, but one out of every two nonwhites, were in female headed families. The lower mobility of female headed households reduced the overall mobility of nonwhites.

But after controlling for family structure, three other factors placed nonwhites at a disadvantage.

-- Larger family size. Among male headed households in the target population whites and nonwhites start with equal money incomes, but nonwhites typically have larger families. This means that nonwhites are deeper in poverty (i.e. fewer dollars per person) and require a greater increase in income than whites to cross the poverty line.

-- Lower estimated incomes. The data in Appendix D shows that nonwhite households have estimated incomes four-fifths as large as whites'. Even if a nonwhite is suffering through a bad year in 1967 and returns to his estimated income in 1968, the estimated income is less likely to bring him above the poverty line.

-- Lower transition probabilities. The calculations in Table 22 show that nonwhites have lower values of $\hat{P}_{68}$ even when family size, county unemployment, estimated 1968 income and actual 1967 income are all held constant.

To this point I have used the models in equations (2) and (3) to discuss short run movements out of poverty. In the next section, I will use the models in a slightly different way to discuss the target population's long run behavior.

Summarizing the Results

Between 1967 and 1968, 31% of the original target population crossed the poverty line. I began this section by asking how this movement occurred.

Some of the movement - about one-tenth - occurred through remarriage or some other change in household head. The remainder occurred because an individual remained with a household that experienced a change in income. Most of these households were small (i.e. two children rather than four), and were headed by a male. Most of the income change came from the male head who experienced a modest increase in hours worked and a significant increase in his wage rate.

The changes were not random. It was possible to pick out in advance those households most likely to move through a combination of variables: the household's size, its race, its 1967 income, the local unemployment rate, and the household's 1968 estimated income. The estimated income variable was based on cross-section measures in the population. It suggested what a husband and wife "should" be earning based on their age, education, and other characteristics. Together, actual 1967 income and estimated 1968 income identified those households who were below their permanent or long-run incomes.

Female headed households with children were less likely to leave poverty. But the ones most likely to move could likewise be identified in advance through a combination of family size, race, 1967 income and an estimate of what the head might earn from full time work compared to what she might receive from AFDC without work.

Using these factors, I estimated models that allowed me to calculate the *ex ante* probabilities that persons in the 1967 target population would be out of poverty in 1968. The estimates showed a substantial difference between white and nonwhite poverty. A white, drawn at random from the 1967 target population had almost even odds of being non-poor in 1968. The corresponding chance for nonwhites was less than one in four.

The analysis in this section concerned movements across the poverty line between 1967 and 1968. As such it left a number of questions unanswered. How often did people return to poverty? What were their long run prospects? How well did their children do when they formed new households? I address these questions in the next section.

V. How Do People Cross the Poverty Line - 1967-1973

In the previous section, I analyzed movements across the poverty line for a single year. In this section I ask similar questions for the entire seven years covered by the Panel Study. I will begin by examining the mobility of the entire target population during the period: how many people left poverty, how many returned and so on. I will then focus on individuals who began the Panel Study as older children in target population. Over seven years, a number of these children left their parents' homes to form new households. Following their mobility allows me to make some inference on the extent to which the children of the poor parents are poor themselves.

Finally, I will re-examine an idea raised in the last section: What appears in the data as mobility out of poverty is better thought of as an individual's returning to his long run, or permanent income.[1] With this idea, I reinterpret the models of Equations (2) and (3) as permanent income models, and I use them to make some estimates on the long run prospects of the target population. These estimates allow me to speculate on a principal topic of this paper, the size of the American underclass.

The Target Population - 1967-1973

In 1968, 31% of the original target population was out of poverty. By 1973, 58% of the target population was out of poverty.[2] It is tempting to interpret these statistics as strict upward mobility -- more and more people leaving poverty and nobody ever returning. In fact this was not the case. Over the seven years, 75% of the target population crossed the poverty line at least once, but 37% crossed more than once -- that is, they left but returned at least once. The average condition of the group was improving but the condition of the particular individuals was more difficult to describe.

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[1] For a discussion of permanent income, see Milton Friedman, A Theory of the Consumption Function, Princeton, Princeton University Press, 1957.

[2] See Table 6 in Section 1.

Who did the moving? Data on this question is presented in Table 23. The data contains the 1973 income distributions for members of the original target population disaggregated by their initial household positions.[3] The table also contains the proportion of each group who never left poverty during the seven years of the data.

The table offers several dimensions of success. One is the proportion of a group who were out of poverty in 1973. Another is the proportion who were out of poverty at least once during the seven years. By either of these measures the data extend to seven years the characteristics of movement noted in the last section. Male-headed households do better than female-headed households. Small households do better than large ones.[4] Non-whites continued to do worse than whites, but the gap was constant rather than proportional. In 1968, 41% of whites and 21% of non-whites had left poverty from the original target population. By 1973, 69% of whites and 49% of non-whites were out of poverty. In part this catch-up is a function of arithmatic: the comparison of rising real incomes to a fixed poverty standard.[5] But in part, nonwhites did better over the period than I would have predicted from the 1967-68 alone.

One other point in the data stands out: children over 14 typically did better than the target population as a whole. In many cases, their performance was associated with their leaving their parents' households to form households of their own.

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[3] Again, income is defined as total money income minus welfare payments.

[4] This can be seen by comparing the income distribution of parents -- e.g. white wives -- to the income distribution of children -- e.g. white male children under 14 in male-headed households. In all cases, the parents do better suggesting that small families were the ones crossing the poverty line.

[5] The poverty standard is fixed in real terms, but is, of course, corrected for inflation.

TABLE 23

THE 1973 INCOME DISTRIBUTION OF INDIVIDUALS IN THE 1967 TARGET POPULATION

For these tables, individuals have been disaggregated by their race, age, and sex of the household head all as of 1967.

$$\text{Define } Z = \frac{\text{Pre-Welfare Household Income in 1973}}{\text{Household Poverty Standard in 1973}}$$

	$0 \leq Z \leq .5$	$.5 \leq Z \leq 1.0$	$1.0 \leq Z \leq 1.5$	$1.5 < Z$	Totals	Proportion of the group who never left poverty 1967-73
A. Male Household Heads						
White Male Heads	5%	13%	17%	64%	100%	5%
Non-White Male Heads	17%	26%	28%	29%	100%	20%
Entire Target Population	18%	24%	22%	36%	100%	25%
B. Wives and Female Household Heads						
White Wives	2%	26%	22%	50%	100%	2%
Non-White Wives	17%	26%	28%	29%	100%	17%
Entire Female Heads	10%	23%	16%	52%	100%	9%
Non-White Female Heads	39%	21%	19%	20%	100%	39%
Entire Target Population	18%	24%	22%	36%	100%	25%
C. Children Under 14						
Males						
White, Male-Headed Household	4%	38%	40%	19%	100%	20%
Non-White, Male-Headed Household	19%	32%	25%	24%	100%	29%
White, Female-Headed Household	21%	30%	28%	22%	100%	44%
Non-White, Female-Headed Household	48%	24%	19%	9%	100%	55%

Table 23 - C. Children Under 14 cont'd.

	0≤Z≤.5	.5≤Z≤1.0	1.0≤Z≤1.5	1.5<Z	Totals	Proportion of the group who never left poverty 1967-73
Females						
White, Male-Headed Household	—	39%	20%	40%	100%	13%
Non-White, Male-Headed Household	20%	29%	32%	19%	100%	31%
White, Female-Headed Household	21%	21%	18%	40%	100%	24%
Non-White Female-Headed Household	50%	18%	19%	13%	100%	55%
Entire Target Population	18%	24%	22%	36%	100%	25%

D. Children Over 14

	0≤Z≤.5	.5≤Z≤1.0	1.0≤Z≤1.5	1.5<Z	Totals	Proportion of the group who never left poverty 1967-73
Males						
White, Male-Headed Household	—	10%	37%	53%	100%	5%
Non-White, Male-Headed Household	8%	14%	20%	58%	100%	13%
White, Female-Headed Household	4%	33%	19%	44%	100%	19%
Non-White, Female-Headed Household	21%	16%	16%	47	100%	24%
Females						
White, Male-Headed Household	—	11%	5%	84%	100%	2%
Non-White, Male-Headed Household	12%	17%	17%	53%	100%	18%
White, Female-Headed Household	6%	17%	6%	71%	100%	4%
Non-White, Female-Headed Household	23%	16%	10%	50%	100%	19%
Entire Target Population	18%	24%	22%	36%	100%	25%

What Happens to the Children?

In Appendix A, I argue that a true culture of poverty implies a set of values transmitted from one generation to the next. The Panel Study data allows a partial test for such a culture: Do the children of the target population form poor households on their own? The test is limited by the Panel Study's seven year duration. A young woman may be married and out of poverty in 1973 but there is no assurance she will stay married forever. A young man may be the father of two in 1973 but he may be the father of six by 1980. Nonetheless, the data permit some crude inferences.

In Figures 11 and 12, I show the 1973 status of individuals who began the Panel Study as children in target population households and who subsequently left to form households of their own. Here again, I caution the reader that the number of actual observations are limited.[6] With this caution in mind, the data indicate that white young men, non-white young men and white young women from poverty homes do well, while non-white young women do badly.

Three pieces of data help place the figures in perspective. In 1973, the poverty standard for an urban family of four had risen to $4,460; the median income for all white families was $12,600; and the median income for all non-white families was $7,700

Among white young men who formed their own households, over 90% were out of poverty with an average income of $9,140. Similarly, 80% of non-white young men who formed their own households were out of poverty with an average income of $8,300. These income figures are large enough to insure most of the men would not return to poverty even if they had two or three children.

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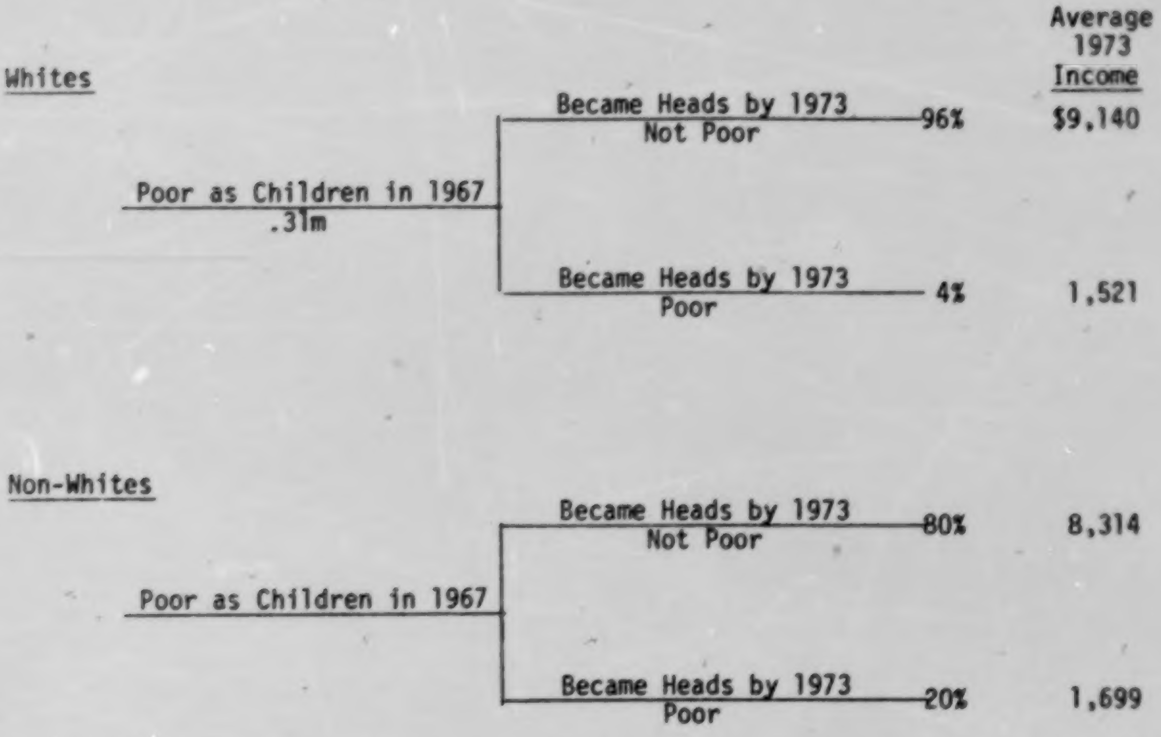
[6] The sample sizes are: white males = 22, non-white males = 137, white females = 11, non-white females = 140.

FIGURE 11

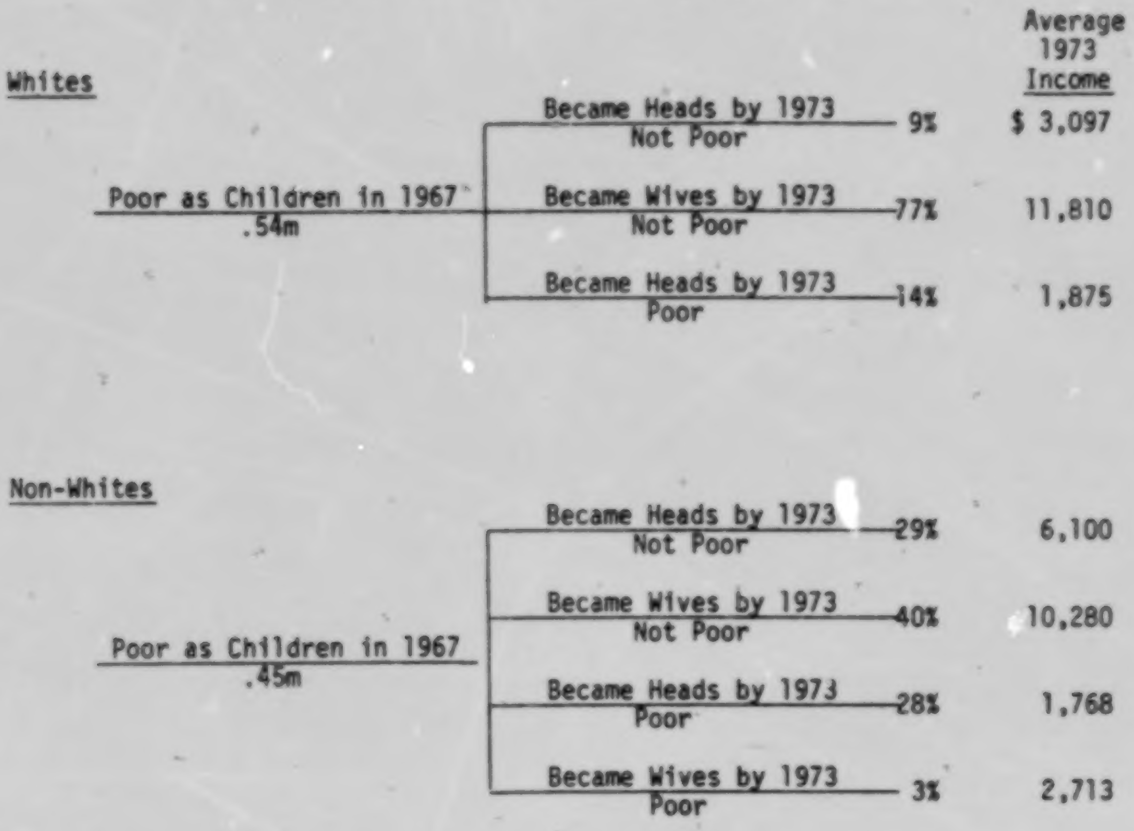
THE 1973 STATUS OF MALES WHO WERE TARGET POPULATION CHILDREN IN 1967 AND WHO SUBSEQUENTLY FORMED THEIR OWN HOMES


Average 1973 Income
Whites
Became Heads by 1973 Not Poor
96%
$9,140
Poor as Children in 1967
.31m
Became Heads by 1973 Poor
4%
1,521
Non-Whites
Became Heads by 1973 Not Poor
80%
8,314
Poor as Children in 1967
Became Heads by 1973 Poor
20%
1,699

Source: Panel Study

FIGURE 12

THE 1973 STATUS OF FEMALES WHO WERE TARGET POPULATION CHILDREN IN 1967 AND WHO SUBSEQUENTLY BECAME HEADS OR WIVES


Average 1973 Income
Whites
Poor as Children in 1967
.54m
Became Heads by 1973
Not Poor
9%
$ 3,097
Became Wives by 1973
Not Poor
77%
11,810
Became Heads by 1973
Poor
14%
1,875
Non-Whites
Poor as Children in 1967
.45m
Became Heads by 1973
Not Poor
29%
6,100
Became Wives by 1973
Not Poor
40%
10,280
Became Heads by 1973
Poor
28%
1,768
Became Wives by 1973
Poor
3%
2,713

Source: Panel Study

Among white young women who formed their own households, three-quarters were wives with average incomes of $11,800. The remaining quarter were female household heads who were in poverty or just out of poverty with incomes so low that the birth of a child or a small income change could make them poor.

The picture for non-white young women is less optimistic. 43% were married and almost all of these (40%) were out of poverty with average household incomes of $10,280. But the remaining 57% were female household heads with average incomes below or just above the poverty line. Some of these women were single without children and would marry in the future. But others were single mothers with children whose long run prospects were not good.

Note that these seven year figures are more encouraging than the single year tabulations in Figures 2 and 7. These differences may be real -- a child leaving his parent's home may take some time to establish him or herself -- or they may be caused by random events. The total number of children forming their own households is small but the number forming in a single year is much smaller. Since Figures 2 and 7 are based on a single year's data, they may be artificially low due to statistical quirks.

Are the children doing well? There is little doubt that children from upper income households would do much better. But the data suggest strongly that coming from a poverty household does not automatically consign a child to poverty. And this should not be surprising. Careful definitions of the culture of poverty include a number of specific characteristics: eposodic work habits, matriarchial families, and so on.[7] Yet we have seen that over half of the target population is in male-headed families where the head usually works long hours. The family is poor because the head works for low wages and his family is large, not because he exhibits deviant behavior.

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[7] These characteristics are detailed in Appendix A.

The case of a child in a female-headed family is more problematic. Is a woman from a female-headed family more prone to becoming a female household head herself? Does a male from a female-headed family have greater difficulty finding a job with adequate pay? The limited data available suggests the answer is no to both questions. Children from male and female-headed poor households do equally well.[8]

The Future of the Target Population[9]

What happens to the original target population after 1973? How many leave poverty? How many remain? How many stay in poverty so long they may be legitimately called an underclass?

If incomes were constant over time, the terms "in poverty" and "out of poverty" would have definite meanings. In fact, incomes fluctuate. Many of the people who left poverty in one year returned soon after. The data in Table 8 showed that five million people in the target population crossed the poverty line in 1968 but only half stayed out of poverty every year through 1973.

Since incomes fluctuate, it makes sense to change perspective and talk about the proportion of time a person is poor over a period of years. In this perspective, a person who is poor in the long run is a person who spends, say, three out of every four years below the poverty line. Correspondingly, a person who is not poor might spend no more than one out of every ten or twenty years below the poverty line. The definitions are arbitrary but they describe actual time paths of income better than simple distinctions based on income for a single year. For purposes of this paper, then, I will make the following definition:

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[8] This tentative conclusion is based on tabulations for 45 young non-white men and 47 non-white young women who had formed their own households by 1971. The data indicate that whether or not a young man's new household was poor was independent of the sex of his original household head. Similarly, whether or not a young woman was a wife or a female head was independent of the sex of her original household head. This second finding does not contradict the idea that non-white young women do relatively badly. Rather, it means they do badly independent of whether they came from a male or a female-headed household.

[9] This section has been helped substantially by comments from Jerry Hausman.

Definition of the Underclass

> The underclass is defined as that portion of the target population who are poor at least three years out of every four.

Given this definition, I can explore the composition of the underclass in two ways. First, I can identify those people in the original target population who were out of poverty no more than two years between 1967-1973. To the extent that the group contains children, I can make some rough guesses about their long run incomes and thus derive some long run estimates of the size of the group.

A second alternative involves returning to the models of the previous section. In developing Equations (2) and (3), I suggested many poor households were below their long run, or permanent, incomes and many movements out of poverty represented households returning to their permanent incomes. Suppose it were possible to know a household's permanent income exactly. Then the household's earnings in a given year could be written:

A Household's Actual Income as a Function of Its Permanent Income

$$\ln(Y_t) = \ln(Y^P) + u_t \qquad (4)$$

where: $\ln$ refers to the natural log function.

Y_t is pre-welfare income in year t.

Y^P is pre-welfare permanent income.

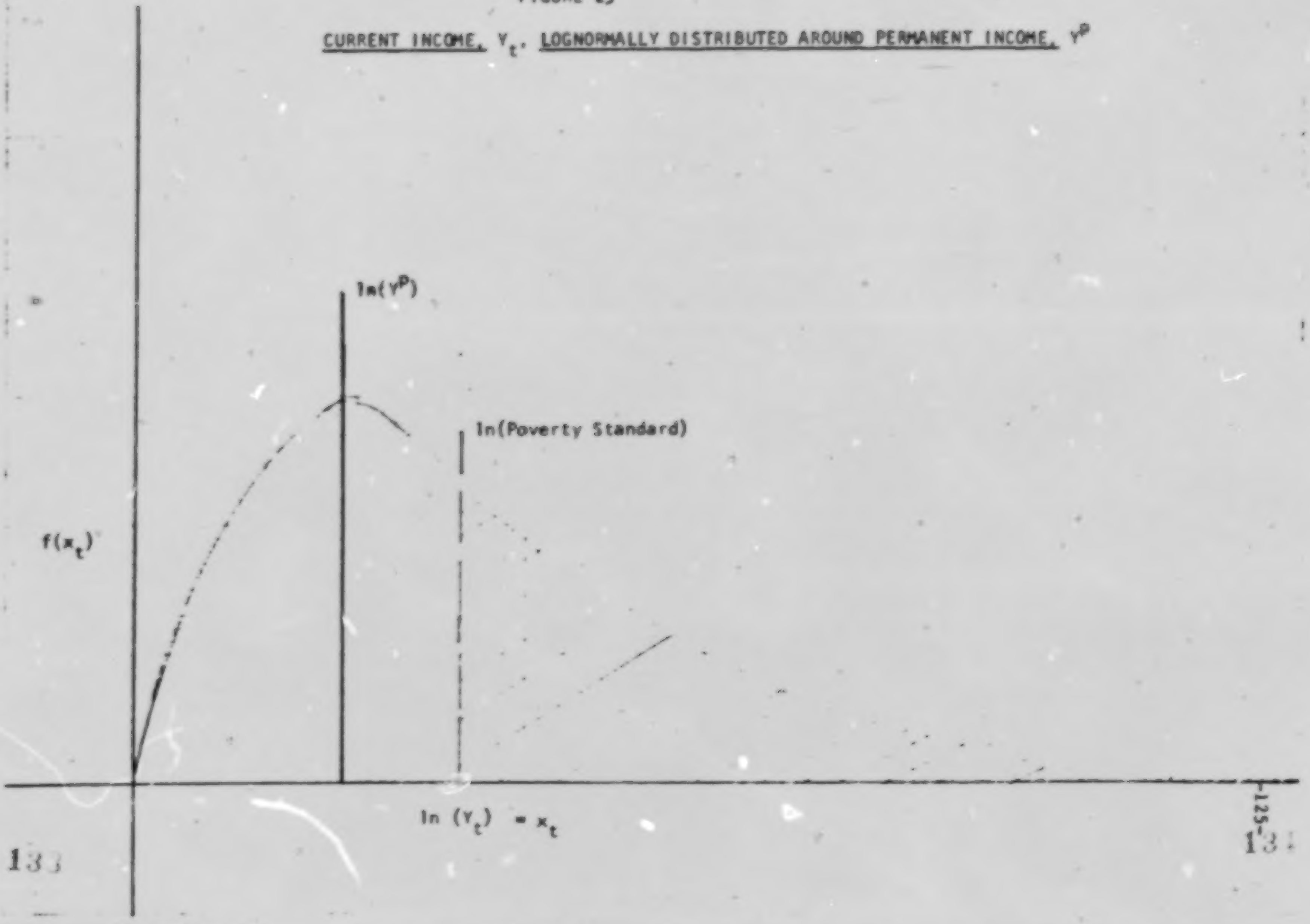
u_t is a random error term assumed to be serially independent and distributed normally with zero mean and constant variance.

Equation (4) says simply that actual income has a lognormal distribution around permanent income. I have drawn this distribution in Figure 13 where actual income is distributed around a mean of Y^P.

If I also knew the size of the family, I could calculate the household's poverty standard. I have marked off a hypothetical poverty standard on Figure 13.

FIGURE 13

CURRENT INCOME, Y_t, LOGNORMALLY DISTRIBUTED AROUND PERMANENT INCOME, Y^P



The shaded area in Figure 13 has two interpretations. In the short run, it is the probability that a household with permanent income equal to Y^p will not be poor in a given year. In the long run, if I assume stationarity -- i.e., all factors are constant -- the shaded area also represents the proportion of time the household will be out of poverty in the long run.

In Section IV, I argued that the combination of actual 1967 income and estimated 1968 income allowed me to identify permanent income for male-headed households. Similarly, the combination of actual 1967 income and the (WAGE/WELFARE) variable were a permanent income proxie for female-headed households with children.

It follows, again assuming all factors constant, that $\widehat{P_{68}}$ estimated from Equation (2) and (3) is equivalent to the shaded area in Figure 13. It is both the probability that a target population will leave poverty in 1968 and the proportion of time the household will spend out of poverty in the long run.

Correspondingly, an alternative way of estimating the underclass is to count all those individuals for whom $\widehat{P_{68}}$ was less than .25.

There is a rub here: the assumption that all factors stay constant over the seven years. Unemployment rates fluctuated substantially over the period. Median real household incomes rose by 14%. Both of these factors affect the variables in Equations (2) and (3). But the group in question -- the group at the bottom of the poverty population -- may well have been insulated from these trends. Moreover, even a modest improvement in their conditions would not have been enough to raise most of them out of poverty.

Table 24 contains two estimates of the underclass classified by their 1967 household heads. The estimate in Column A is obtained by counting every member of the original target population who was out of poverty no more than two years between 1967 and 1973. The estimate in Column B is obtained by counting every member of the target population for whom the calculated value of $\widehat{P_{68}}$ was less than .25.

TABLE 24

TWO ESTIMATES OF THE SIZE OF THE UNDERCLASS IN THE SHORT RUN

(Figures in parentheses refer to the number of children under 18 within each group.)

Characteristics of 1967 Household Head	A. Members of the 1967 target population who spent two or less years out of poverty 1967-1973	B. Members of the 1967 target population who had values of $\hat{P}_{68} \le .25$
White Male	1.59m (1.17m)	1.14m (.80m)
Non-White Male	2.39m (1.76m)	2.44m (1.57m)
White Female	.94m (.70m)	.82m (.43m)
Non-White Female	2.80m (2.23m)	3.26m (2.28m)
Total	7.72m (5.86m)	7.67m (5.08m)

Mean number of years out of poverty for individuals in Column A = .7 years

Mean value of $\hat{P}_{68}$ for individuals in Column B = .13

The two estimates are very close. Both describe a group of 7.7 million people. The estimate based on $\widehat{P_{68}}$ is too optimistic on the prospects for white, male-headed households and too pessimistic on the prospects for non-white, female-headed households. Beyond that, the two estimates are in substantial agreement. The underclass is about 70% non-white. About half of its members live in female-headed households. About 70% of its members are children under 18. The estimate based on $\widehat{P_{68}}$ has an average value of $\widehat{P_{68}} = .13$; that is, the estimates predict these 7.7 million people should be out of poverty 13% of the time. The direct tabulations in Column A show the group was actually out of poverty .7 years or 10% of the time.

What do the estimates mean? The original target population contained 16.35 million people. Both estimates suggest that within this population, there was a group of 7.7 million people (47%) who could expect to be out of poverty about one year out of every ten. Moreover, the similarity between Column A and Column B in Table 24 suggest individuals in this group could be picked out in advance by a combination of their family size, their estimated income, their actual income and other related variables.

The estimates in Table 24 are for the medium run -- the period before large numbers of children leave the home to form homes of their own. I shall return to longer run estimates later in this section.

Before doing so, I will examine the remainder of the target population. This group is displayed in Table 25. Again I use two estimates: one based on direct tabulation of those who were out of poverty three or more years between 1967 and 1973; the other based on members of the target population for whom $\widehat{P_{68}}$ was greater than .25.

By either estimate, this group contains relatively fewer non-whites, fewer female-headed households, and fewer children. But the two estimates differ

TABLE 25

TWO ESTIMATES OF THE 1967 TARGET POPULATION WHO ARE NOT PART OF THE UNDERCLASS

(Figures in parentheses refer to the number of children under 18 within each group.)

Characteristics of 1967 Household Head	A. Members of the 1967 Target Population who spent three or more years out of poverty 1967-1973	B. Members of the 1967 Target Population who had values of $\widehat{P_{68}} > .25$
White Male	3.43m (1.54m)	3.88m (1.91m)
Non-White Male	2.31m (1.42m)	2.26m (1.61m)
White Female	1.51m (.81m)	1.63m (.86m)
Non-White Female	1.38m (.51m)	.92m (.46m)
Total	8.63m (4.28m)	8.69m (4.84m)

Mean number of years out of poverty for individuals in Column A = 4.48 years

Mean value of $\widehat{P_{68}}$ for individuals in Column B = .50

sharply in their expectations for the group. For the people in Column B, the mean value of $\widehat{P}_{68}$ is .50 -- that is, I estimate these people should be out of poverty, on average, 50% of the time. In fact, the group described in Column A were out of poverty 64% of the time. The model significantly underestimates the performance of the group.

The problem here is the assumption of stationarity. Rising real wages, generally low unemployment rates and the formation of new households all contribute to a person's ability to get out of poverty. This is particularly true for the people in Table 25, who, unlike the underclass, were within striking distance of the poverty line to begin with.

The problem is most serious at the upper tail of the distribution of $\widehat{P}_{68}$. Suppose I define a "mistake" as a person whose 1967 poverty status was significantly out of line with his or her near term prospects. To make the definition operational, let a mistake be a member of the original target population who spent five or more years out of poverty between 1967 and 1973. According to the permanent income model, this set should consist of people who had values of $\widehat{P}_{68}$ greater than .7 (i.e., .7 X 7 years = 4.9 years out of poverty). The models in Equations (2) and (3) estimate this group contains 1.3 million people. In fact the group contains 4.1 million people.[10] Presumably, adequate corrections for rising real incomes and changes in unemployment rates could reduce some of this discrepancy.

To summarize, the original target population can be thought of as containing three parts. The first, about 7.7 million people, is the underclass, a group who was poor in 1967 and can expect to be poor for most of the near future. The second, about 4.1 million people were "mistakes" in the sense that they can expect to be out of poverty for most of the near future. The third group, about 4.5 million people, can expect to be out of poverty about half the time during the near future.

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[10] See Table 8 in Section 2.

The Underclass in the Longer Run

I noted above that the estimates in Table 24 were medium run estimates -- estimates made before large numbers of children formed their own new homes. By either estimate, about 70% of the underclass are children, and so what happens to these children will determine the ultimate size of the group. Table 26 contains some crude projections based on patterns in Figures 11 and 12. Under these projections, long run estimates of the underclass fall to something between 3.7 and 4.3 million people, about 25% of the original target population. The assumptions underlying these projections are detailed at the end of Table 26.

A Summary of Results

I began this section by examining the mobility of the target population between 1967 and 1973. By 1973, 58% of the original target population was above the poverty line. Individual progress was not smooth. Many members of the population crossed the poverty line more than once. But over the period the economic position of the group improved.

Disaggregated data showed households most likely to cross the poverty line were small and headed by males. Non-whites were less likely to leave poverty than whites, but the seven year difference between the races was relatively smaller than the 1967-1968 difference described in Section IV.

Children did better than their parents. Most new households formed by poor children -- about four out of five -- had incomes well above the poverty line. The exception was non-white young women: three-fifths of their new households were below or just above the poverty line.

I concluded the section by reinterpreting the models used in the last section as permanent income models. Under this interpretation, the mobility of the target population was the result of their returning to their permanent incomes.

TABLE 26

TWO ESTIMATES OF THE SIZE OF THE UNDERCLASS IN THE LONG RUN*

Characteristics of Household Head	A. Extrapolation based on the direct tabulation in Column A, Table 24	B. Extrapolation based on the direct tabulation in Column b, Table 24
White Male	.46m	.37m
Non-White Male	1.05m	1.27m
White Female	.46m	.53m
Non-White Female	1.77m	2.14m
Total	3.74m	4.31m

In making these calculations, I have used the following assumptions:

a) The estimate in Column A begins with the figures in Column A of Table 24. The estimate in Column B begins with the figures in Column B of Table 24.

b) All adults in Columns A and B of Table 24 are assumed to remain in the underclass in the long run.

c) All children in Table 24 are assumed to divide in the proportions listed in Figures 11 and 12.

d) All male young men who are not poor are not part of the underclass. All male young men who are poor (i.e., 4% of the whites and 21% of the non-whites) are part of the underclass.

e) All young women who are both married and out of poverty are not part of the underclass. All young women who are either female heads or who are married are poor are part of the underclass (i.e., 23% of whites and 60% of non-whites).

$\hat{P}_{68}$ now had two meanings. One, discussed in Section IV, was the ex ante probability that a target population household would be out of poverty in 1968. The other was the proportion of time the household would be out of poverty in the long run.

Using this second interpretation, I defined the underclass as that group for whom $\hat{P}_{68}$ was less than .25 -- the group who could expect to be poor at least three years out of four. The resulting group contained 7.7 million people and compared closely with the group who in fact had been out of poverty no more than two years between 1967 and 1973.

The permanent income model did less well in describing the remaining 8.6 million people in the target population. The model predicted they would be out of poverty, on average, about 50% of the time. In fact they were out 64% of the time and 4.1 million people were out of poverty five or six years between 1967 and 1973.

To summarize, the original target population of 16.35 million can be thought of as three groups. One, containing 7.7 million people, will be poor for almost all of the near term. The second, containing 4.6 million people, will be poor about one-half of the time during the near term. The third, containing 4.1 million people, can be regarded as non-poor, people who will be out of poverty for most of the near term.

Of this 7.7 million person underclass, about 70% are children. As these children leave their parents' homes and form their own homes, the size of this permanently poor group will shrink to about 4 million.

VI. How Big is the American Underclass?

I began this paper by suggesting an anti-poverty program like a negative income tax or food stamps could serve two functions. One was permanent support to people who would always need support. The other was short term support to people who were going through hard but temporary times.

In the last section, I suggested the 1967 target population could be thought of as three groups. One, about 7.7 million people, would require continuous long run support. The second, about 4.1 million people, would require only short term support since they were in poverty only one or two years out of the seven years studied. The final group, about 4.5 million people, could expect to be out of poverty about 50% of the time. Over the longer run, as children leave their parent's households and form new households, the group requiring continuous support will decline from 7.7 million people to about 4 million people.

My analysis was drawn from a particular economic period. In 1974, one year after my data ended, sharp increases in food and crude oil prices caused a fall in real incomes and a rise in the size of the official poverty population. Nonetheless, the data suggest certain conclusions that are likely to hold at any time.

First, about three-quarters of the original target population were not mistakes. They were poor in 1967 and could expect to be poor for at least half of the period that followed. By 1973, 36% of the population had incomes above (1.5) x the poverty line, but even many of these people had some chance of returning to poverty in the near future.[1] The exception to this statement were the children.

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[1] See Table 6. Calculations based on the estimates in Table 21 show a male household head with actual and estimated income equal to 150% of the poverty line has about one chance in five of returning to poverty next year. (These calculations assume a 5% unemployment rate.)

Most children who formed their own households earned incomes substantially above those of their parents and above the poverty line.

Second, it is possible for a male household head to work full time and yet earn an income less than the poverty standard. The data in Table 13 showed that most male heads in the target population worked close to full time. The experiments in Table 16 showed that even if the men were to work these hours at their estimated wages,[2] two thirds of them would remain poor.

This result helps explain the large number of people who cycled in and out of poverty. In many cases, the wages received by poor male heads were abnormally low. Their return to better wages lifted their households above the poverty line. But it is unrealistic to expect a typical wage increase to increase a household's income very much. Correspondingly, many of those who left poverty had low enough incomes that a piece of bad luck would leave them poor again.

Third, the poverty of female-headed households is more serious than the poverty of male-headed households. The statement sounds intuitive, but the Panel Study data adds to intuition by talking about poverty over the long run. The typical male household head in the target population sample was poor 46% of the time between 1967 and 1973. The typical white female household head was poor 63% of the time and the typical non-white female head was poor 75% of the time.[3]

Here, too, the reasons are obvious. Female heads, like male heads, have incomes that fluctuate from year to year. But their incomes fluctuate around levels so low that it is unlikely they can leave poverty solely from their own earnings. This finding was also demonstrated in the experiments in Table 16.

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[2] By substituting estimated wages for actual wages, I abstract from any negative unobserved characteristics. See Appendix C

[3] Here, as elsewhere in this paper, poverty refers to money income excluding payments from AFDC, AFDC-U, and general assistance.

Finally, non-white poverty is more serious than white poverty. Within the poverty population, non-whites have lower incomes than whites and they are less likely to leave poverty even when incomes are held constant. The average white in the target population spent 3.3 years out of poverty between 1967 and 1973. The corresponding figure for non-whites was 2.2 years.

How big is the American underclass? The answer depends upon the definition of the term. If the underclass refers to people who are arguably poor by choice -- that is, people who would be out of poverty if they "behaved like everybody else," the number seems small, perhaps 2 million. If the underclass refers to people who will be poor throughout the near term, the number is closer to 8 million.

Eight million people is only half of the target population as I have defined it. Correspondingly, official poverty statistics overstate the long term nature of poverty perhaps by a factor of two. But the number of long term poor is still large enough to be a cause for serious concern.

VII. The Impact of AFDC on the Labor Supply of Female Household Heads

At an early stage in this research, I believed the expected income model of Equation (2) would hold for all types of households including female-headed households with children. I was wrong, for reasons I shall discuss later in this section. But by the time I realized I was wrong, I had estimated a labor supply equation for female-headed households. While I did not use the equation in the body of this paper, the equation is of some interest in itself and so I will present it here. In particular, the equation gives some insight into the impact of AFDC payments on the number of hours a female head will work.

Table 27 contains the distrubution of hours worked by female household heads with children under 18. The distribution is bi-modal. 43% of the sample works less than 500 hours (and most of these do not work at all). 38% of the sample works over 1,500 hours. Only 18% works between 500 and 1,500 hours.

TABLE 27

THE DISTRIBUTION OF HOURS WORKED ANNUALLY BY FEMALE HOUSEHOLD HEADS WITH CHILDREN UNDER 18 - 1968

	Less than 500 hours	500 - 1,500 hours	Over 1,500 hours
Percent In Each Class	43%	18%	38%
Mean Hours Worked Within Each Class	40 hours	992 hours	2,043 hours

Source: Panel Study on Income Dynamics

Normally, one estimates a labor supply function based on the labor-leisure trade-off shown in Figure 14. The two parameters of the budget set are the wage rate and the maximum household income recieved if the individual works full time. A typical equation might look like Equation (5) below.

A Standard Estimation of Labor Supply

$$(5) \quad H = \beta_0 + \beta_1 W + \beta_2 Y^{max} + e$$

where:	H	is the annual hours worked by the person.
	W	is the person's average annual wage rate.
	Y^{max}	is the person's maximum household income assuming he or she (and other household members) work full time.
	e	is a stochastic error term.
	β_0 β_1 β_2	are estimated coefficients.

Applying Equation (5) to the case of female-headed households raises two problems. First, the shape of the budget set is not fixed. Women in this sample have access to AFDC. If they participate in the program, it will raise their minimum income and lower their effective wage rate (since increased earnings are partially offset by reduced welfare payments. If all eligibles received welfare, the problem would be straightforward, but Barbara Boland has estimated that in the middle of the 1960's, the participation rate among eligible females was only 60-70%.[1] Thus some families were on, others were not, and the shape of the budget set became endogenous to the rest of the model.

A second problem concerns the large numbers of women who do not work at all. This is the so-called Tobit problem where a dependent variable has an upper bound and, in fact, large numbers of observations are at this bound. When this occurs, it can no longer be assumed that the error term in Equation (5) is normally distributed and so least squares is no longer an appropriate estimating procedure.

To circumvent these problems, I have estimated a "quick and dirty" labor supply function based on a modification of a technique used by Barr and Hall.[2]

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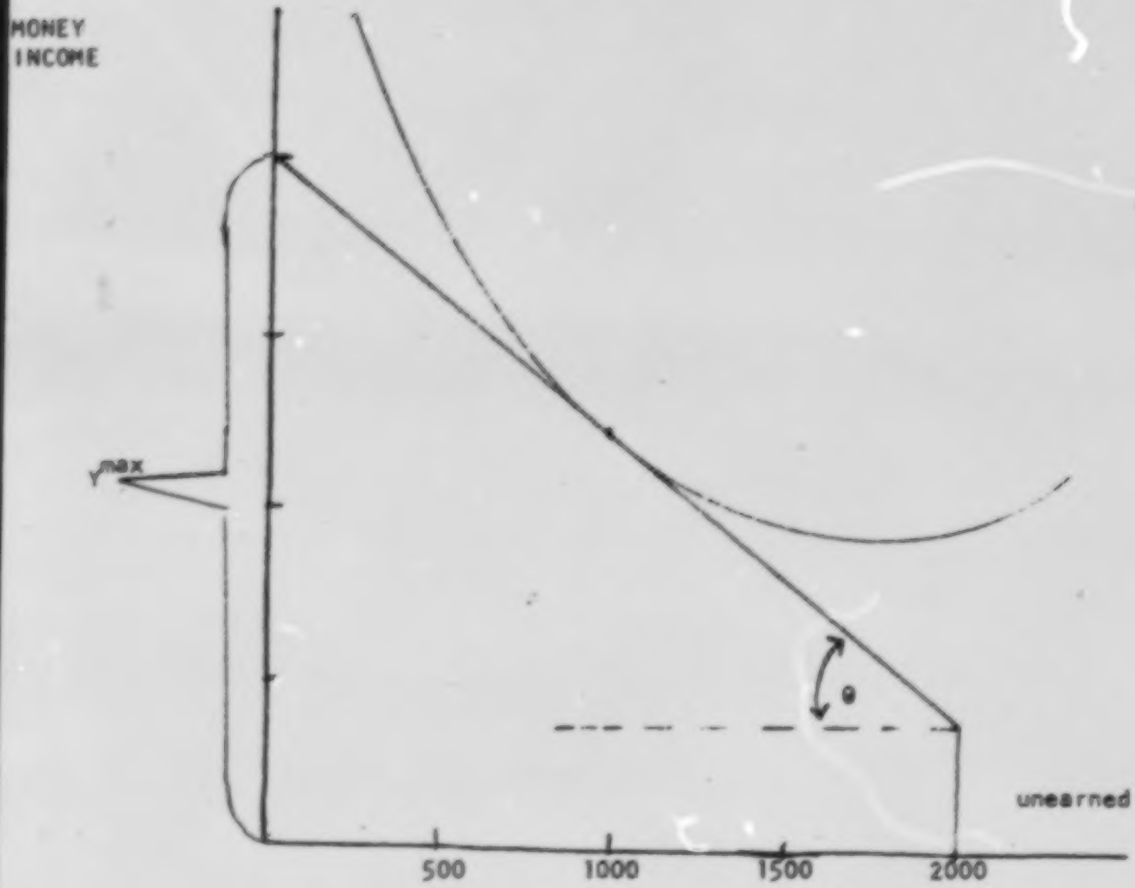
[1] See Barbara Boland, op. cit.

[2] Nicholas A. Barr and Robert E. Hall, "The Probability of Dependence on Public Assistance," mimeo, dated July, 1973.

FIGURE 14

DIAGRAMATIC BASIS FOR A LABOR SUPPLY CURVE


MONEY
INCOME
Y^{max}
θ
unearned Y
500
1000
1500
2000

Hours of Leisure
(Hours of Labor Measured in Reverse Direction)

The tangent of the angle θ equals the person's after-tax wage rate.

Consider three classes of labor supply: less than 500 hours, 500-1,500 hours, and more than 1,500 hours. Then define p_0 as the probability a woman with given characteristics works less than 500 hours; p_1 as the probability she works 500-1,500 hours; and p_2 that she works more than 1,500 hours. Given these definitions, I can calculate her expected hours according to the following equation:

Calculation of a Female Head's Expected Hours of Work

$$\hat{H} = p_0 \text{ X } 39 + p_1 \text{ X } 991 + p_2 \text{ X } 2043 \tag{6}$$

where: $\hat{H}$ is the expected hours worked by the woman.

Equation (6) says that a woman's expected hours can be written as the product of the probability she works a certain class of hours multiplied by the mean number of hours worked in the class, summed for all three classes.

In a standard regression model, I would explain hours worked by a set of independent variables. In this model, I will follow a similar procedure by using a multiple logit model to estimate the probabilities, p_0, p_1, and p_2. Define x_i to be a vector of characteristics of the i'th female head. Then the model will consist of two vectors of estimated coefficients, β_1, and β_2 such that:

Logit Calculation of Probability

$$p_0 = \frac{1}{1 + e^{\beta_1' x_i} + e^{\beta_2' x_i}}$$

$$p_1 = \frac{e^{\beta_1' x_i}}{1 + e^{\beta_1' x_i} + e^{\beta_2' x_i}}$$

$$p_2 = \frac{e^{\beta_2' x_i}}{1 + e^{\beta_1' x_i} + e^{\beta_2' x_i}}$$

Note that I estimate only two vectors of coefficients. Since every woman has to work in one of the three classes, I can estimate p_1 and p_2 directly and then calculate p_0 by the relationship that $p_0 + p_1 + p_2 = 1$.

After some experimentation, I settled on a model of the following form:

Estimating Model for Female Household Head's Labor Supply

(7)

$\overset{Z}{X}_1^i$ = f:(Estimated Wage, WAGE/WELFARE, Race, Region, Child)

where: $\overset{Z}{\cancel{X}}_1$ = 1 if the woman worked the i'th class of hours (i = 1,2).

= 0 otherwise.

Estimated Wage is the woman's estimated wages.[3]

$\frac{\text{WAGE}}{\text{WELFARE}}$ = is the estimated ratio of income from full time work to income from welfare without work, described in Equation (3).

Race = 1 if the woman is non-white.

= 0 if she is white.

Region = 1 if the woman lives in the South.

= 0 if she lives outside the South.

Child = 1 if the woman's youngest child is less than six years old.

= 0 otherwise.

Note here, as in Equation (3), the estimated wage and WAGE/WELFARE variables are hypothetical. The estimated wage measures what I think the woman will receive in the labor market. It is positive even if the woman does not work (unless she is critically disabled). Similarly, the (WAGE/WELFARE) variable is based on the average AFDC payment per person per month in the woman's state. It does not assume that the woman is actually receiving welfare.

---

[3] This estimated wage variable was first discussed in Section III. It is detailed in Appendix B.

Estimates of the model are presented in Table 28. The first column refers to women who work less than 500 hours and serves as a reference group. When a variable in the second column has a statistically significant coefficient, it means the variable is a good predictor of women who work part time rather than not working at all. Similarly, when a variable in the third column has a statistically significant coefficient, it means the variable is a good predictor of women who work full time rather than not at all.

The estimates in Table 28 show that both the estimated wage and the (WAGE/WELFARE) variable are significant predictors of work status. Race is insignificant. Having a preschool child militates against full time work and residing in the South increases the probability of work. The impact of a Southern residence is significant, even though estimated wages are corrected for region and welfare payments vary by individual state. This suggests that either recipient attitudes toward welfare are different in the South, or Southern AFDC administrators make it difficult to receive aid.

The estimating equations have one serious problem. Note that the coefficients for each variable are of roughly equal size in both columns. This means that the equation does a good job of distinguishing those who work more than 500 hours from those who don't but it does a bad job of distinguishing those who work part time (e.g., 500 hours-1,500 hours) from those who work full time.[4] This guarantees that estimates of hours worked will have large standard errors.

In Figures 15 and 16, I sketch four labor supply curves estimated by the model. Figure 15 refers to a white woman with three children who lives outside the South and who has no children under age six. Figure 16 refers to a non-white woman with three children who lives in the South and has a child under age six.

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[4] That is, the roughly equal coefficients predict roughly equal probabilities that a particular woman works part time and works full time.

TABLE 28

Logic Estimations of the Probability that a Female Household Head With Children Works a Given Number of Hours in 1968, Based on 1968 Characteristics

(standard errors in parentheses)

	Hours Worked in 1968		
	Less than 500 Hours	500 - 1,500 Hours	Greater than 1,500 Hours
Intercept	—	-3.55	-3.43
	—	(.53)	(.48)
Estimated Wage	—	.88	.98
	—	(.22)	(.20)
$\frac{\text{WAGE}}{\text{WELFARE}}$	—	.48	.52
	—	(.10)	(.09)
Race	—	.07	.36
	—	(.32)	(.29)
Resides in the South	—	1.03	1.45
	—	(.33)	(.29)
	—	-.39	-.81
Pre-school Child	—	(.26)	(.23)
Percent Choosing Alternative	44%	18%	38%
Mean Hours Worked Within Interval	40 hours	992 hours	2,043 hours

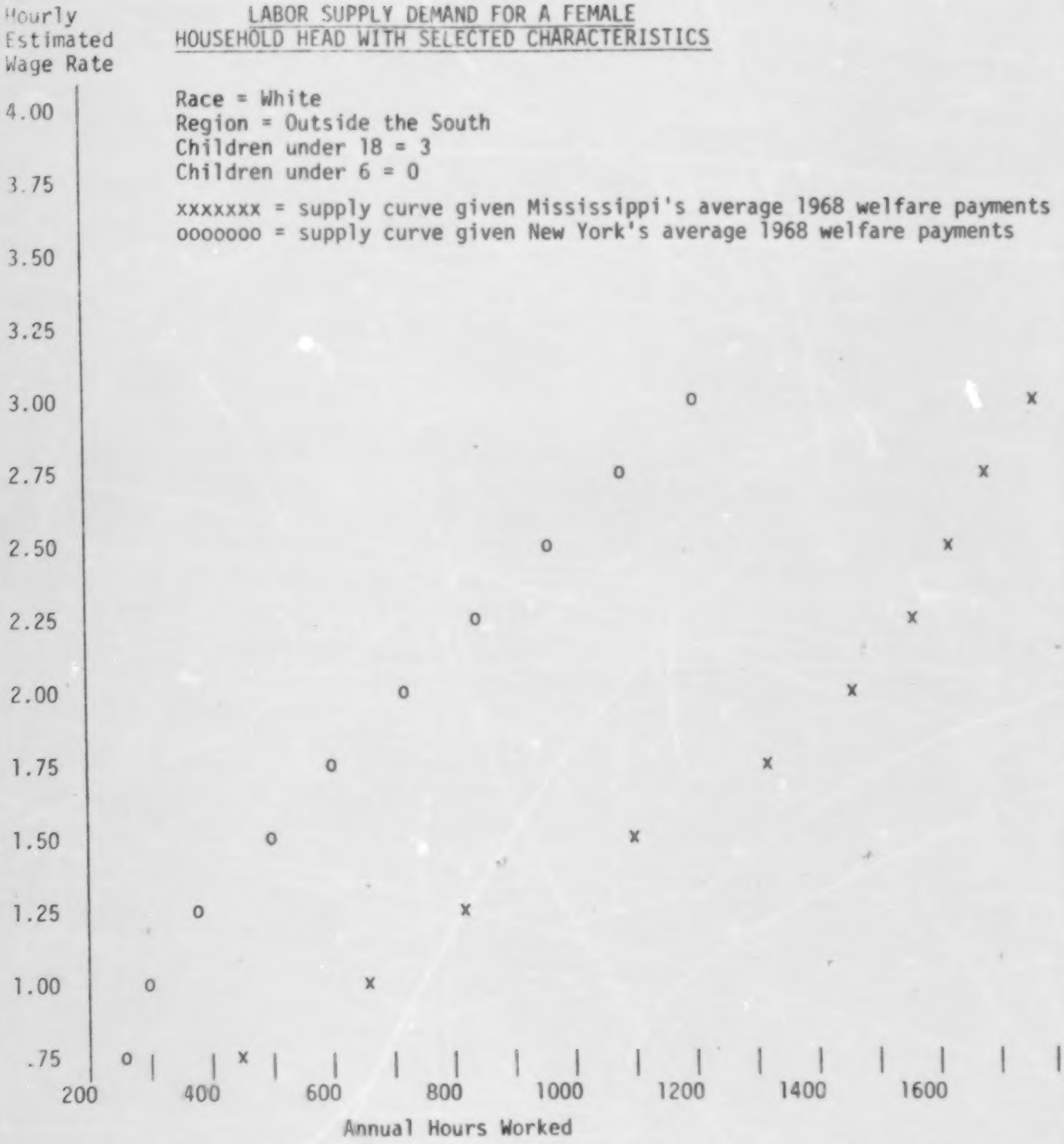
Percent Correctly Predicted = 63%

Number of Observations = 588

Likelihood Ratio Index = .26

FIGURE 15

LABOR SUPPLY DEMAND FOR A FEMALE
HOUSEHOLD HEAD WITH SELECTED CHARACTERISTICS



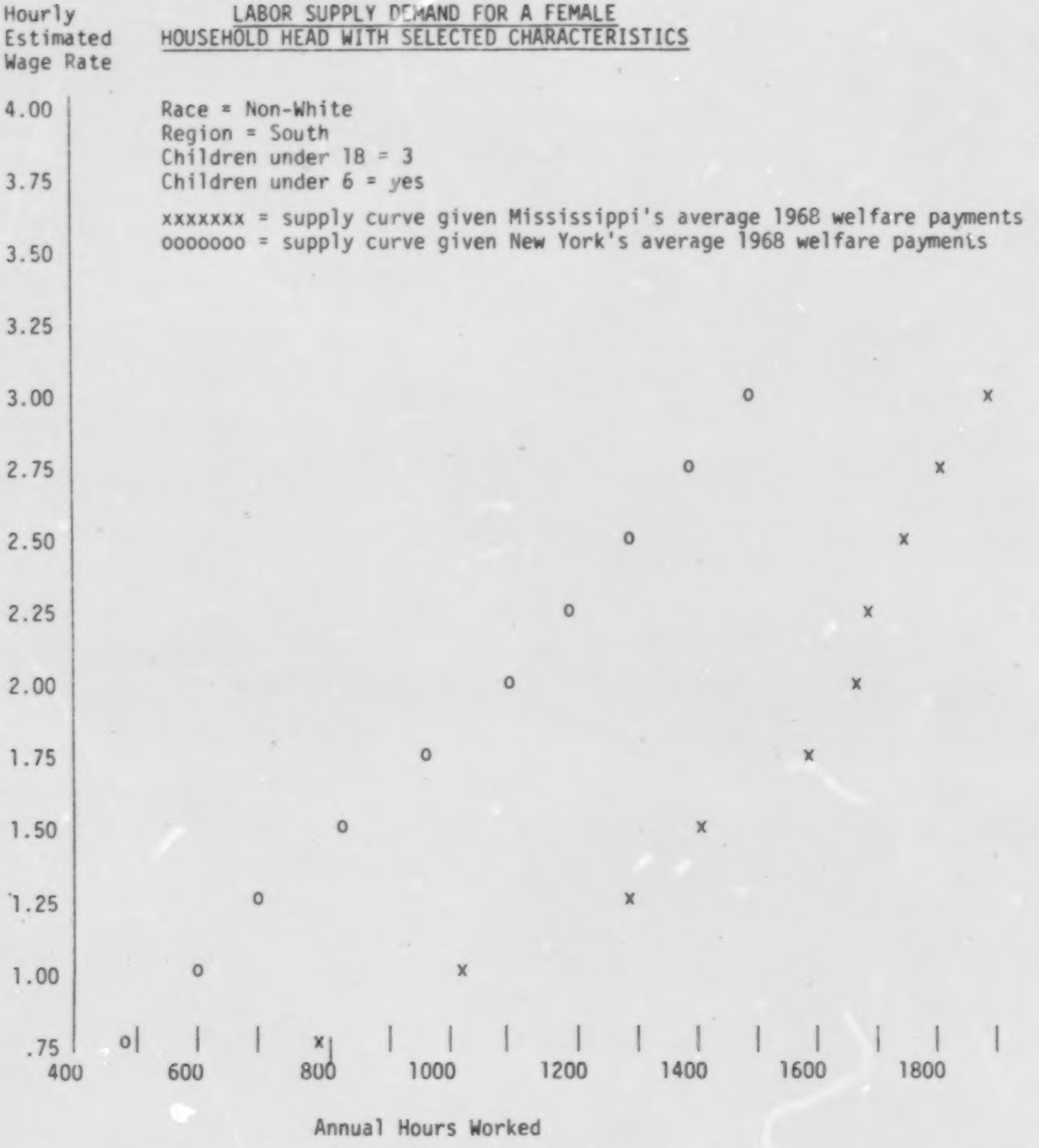
Race = White
Region = Outside the South
Children under 18 = 3
Children under 6 = 0

xxxxxxx = supply curve given Mississippi's average 1968 welfare payments
ooooooo = supply curve given New York's average 1968 welfare payments

0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25
242.52	304.56	380.93	472.21	577.60	694.54	818.77	944.85	1067.12	1180.66	1282.06
446.91	652.49	889.38	1121.20	1315.56	1459.79	1558.83	1624.68	1668.82	1699.62	1722.50

FIGURE 16

LABOR SUPPLY DEMAND FOR A FEMALE HOUSEHOLD HEAD WITH SELECTED CHARACTERISTICS



.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25
472.90	580.26	700.00	827.86	9[illegible]8.23	1085.16	1203.38	1309.17	1400.61	1477.46	1540.69
793.60	1040.84	1263.29	1436.84	155[illegible].09	1640.46	1693.87	1729.74	1755.08	1774.22	1789.70

In each figure, I have drawn two supply curves. The inner curve refers to the labor supply assuming the state pays an AFDC benefit of $70.25 per person per month, the average benefit paid by New York State in 1968. The outer curve refers to the estimation assuming the state pays an AFDC benefit of $14.50 per month, the average benefit paid by Mississippi in 1968. Actual points for both curves are given at the bottom of each figure.

Within each figure, the difference between the two curves is quite large in an absolute sense -- 300-600 hours annually, depending upon the wage. But this change in hours is brought about by a 500% change in welfare payments.

At a typical wage of $1.50, the curve in Figure 15 has an AFDC elasticity of .61 -- that is, a one percent rise in AFDC payments will cause a reduction in hours worked of six-tenths of a percent. At a similar wage, the curve in Figure 16 has an AFDC elasticity of .40. Other types of families produce estimates in the same range.

I should caution the reader to interpret the supply curves as average responses for groups of women. Notice in both figures that most combinations of wages and welfare predict between 500 and 1,500 hours of labor supplied. Yet the data in Table 27 suggested very few women work in this range. The problem is analogous to flipping a fair coin. If I flipped the coin 500 times, I would have a reasonable expectation of getting 250 heads. But if I flip a coin once, I do not have an expectation of getting one-half a head. Similarly, if I look at a group of women with particular characteristics, it is reasonable to expect that they will work on average, say, 750 hours. But if I look at an individual in the group, it is far more likely she will work 2,000 hours or not at all.

A true individual supply curve would look much flatter. It would show that a woman was insensitive to changes in variables below some threshold but when that threshold was reached, she changed her hours of work substantially. Correspondingly, when I say an AFDC elasticity is .6, it does not mean that all women change their hours worked uniformly when AFDC benefits are changed. Rather it means that a few women change their hours worked dramatically while most women continue as before.

This problem of flip-flop and large standard errors made estimated hours and estimated income unsuitable for a model like Equation (3) in Section III. Nonetheless, the estimation did provide useful information: women with higher estimated wages work relatively longer hours; women with access to higher AFDC payments work relatively shorter hours. This information was incorporated into Equation (3) directly through the (WAGE/WELFARE) variable.

Summary

In this section, I have outlined a method for estimating an approximate labor supply curve for female household heads who have access to AFDC payments. I find that AFDC payments have a supply elasticity in the range .4-.6: that is, a one percent increase in average AFDC payments will reduce a woman's labor supply by an expected value of four to six-tenths of a percent.

APPENDIX A

A SHORT INTELLECTUAL HISTORY

Suppose we are in a period when the size of the poverty population remains relatively constant. How many of the poor in a given year remain poor one year later? Two years later? Five years later? The questions are straightforward and one supposes that by, say, 1969, the answers must have been well known. The supposition is incorrect. Despite the wealth of research on poverty, few people explored the degree to which poverty was a temporary, rather than permanent

I believe the question went unexplored for two, equally important reasons. One was the lack of good longitudinal data on individuals. The other was the supposition by many social scientists that they knew the answer already: the poor were immobile. A consensus view might have been: "If we can sustain full employment for several years, the size the poverty population will be reduced, but if the size of the poverty population remains constant from one year to the next, the same individuals will remain in poverty."

At one level the confusion between numbers and individual experience is routine. Female headed households, teenagers in gangs, unemployed individuals, and families on welfare are all examples of pools with individuals constantly entering and leaving. Yet only in the case of unemployment has the public debate (e.g. television news) begun to distinguish between the number of people in the pool and the duration of individual experiences. In the case of poverty, this confusion has been re-enforced by an apparently appropriate intellectual groundwork, the "culture of poverty," to which I now turn.

income. The anthropologist's definition is also politically delicate and it is hard to imagine a campaign for aid to people who behave in this fashion. But perhaps most important, the anthropologist's culture of poverty is sharply delimited. As Oscar Lewis writes:

> ...I believe that although there is still a great deal of poverty in the United States (estimates range from thirty to fifty million people), there is relatively little of what I would call the culture of poverty. My rough guess would be that only about 20 percent of the population below the poverty line (between six and ten million people) in the United States have characteristics which would justify classifying their way of life as that of a culture of poverty. Probably the largest sector within this group would consist of very low-income Negroes, Mexicans, Puerto Ricans, American Indians and Southern poor whites. The relatively small number of people in the United States with a culture of poverty is a positive factor because it is much more difficult to eliminate the culture of poverty than to eliminate poverty per se.[4]

Despite Lewis' warning, the idea of a culture of poverty received a great deal of attention largely because so much was written about it. The passage from Lewis, quoted above, appears in the preface to La Vida. But the body of La Vida, 669 pages long, is a detailed description of an extended family who exhibit just such a culture.

Elliot Liebow's classic work, Tally's Corner describes a similar kind of episodic life among a group of black men in Washington, D.C.[5] His writing is so good and his picture is so compelling that nobody (including the author) stops to ask how representative these men are of all black males who live in the area.

To a certain extent my criticism is unfair. Lewis and Liebow do not pretend to describe all of society. Their purpose is to describe specific

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[4] Oscar Lewis, op. cit., pp. li. In part Lewis was responding to loose uses of the term by Harrington and others.

[5] Elliot Liebow, Tally's Corner, A Study of Negro Streetcorner Men, Boston, Little Brown, 1967

Some people learned about poverty from statistical studies[1] but most learned about it from popular writings.[2] During the 1960's there were a wide variety of such writings ranging from Michael Harrington's The Other America through Edward C. Banfield's The Unheavenly City to Oscar Lewis' La Vida.[3] The books contained many diverse themes but a common theme stood out: an emphasis on something called a culture of poverty or, alternatively, lower class culture.

The term "culture of poverty" has at least two meanings. One is the anthropologist's usage, a harsh description of lower class life which contains patterns of serial monogamy, matriarchal families, present-time psychological orientation, frequent resort to violence, and related characteristics. It is this usage which corresponds to the sociologist's definition of lower class culture. The other usage refers simply to a cycle of low education, leading to bad jobs, leading to low education for one's children. In this second, "milder" version, no reference is made to sexual or psychological characteristics.

The anthropologist's version of the culture of poverty is clearly a culture -- a wholistic set of values that one easily can imagine being transmitted from one generation to the next. Moreover, people exhibiting the described traits would have a great deal of difficulty earning a steady, decent individuals through anthropological fieldwork. But other, broader social science studies highlight the culture of poverty in a similar way. Banfield's The Unheavenly City places great emphasis on the problems created for urban life by lower class culture, a culture similar to the one described by Lewis.[6] Because this culture plays an important part in Banfield's analysis, a casual reader may believe the group displaying the culture is quite large. In fact, Banfield is unspecific about the group's size. Daniel P. Moynihan's "The Negro Family -- The Case for National Action," is a description of the dangers of lower class, matriarchal life coupled with a warning that this life may envelope as much as half of the American Negro community.[7]

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[1] Because poverty was a newly discovered subject in the early 1960's, even the best statistical studies were restricted to cross-section data. Thus Mollie Orshansky's "Counting the Poor, Another Look at the Poverty Population" (Social Security Bulletin, January 1965, pp. 3-29) gave seminal estimates of the size and composition of the poverty population, but it had nothing to say about the permanence of individual poverty.

[2] Still others learned about poverty through first hand experience.

[3] Michael Harrington, The Other America, New York, MacMillan, 1962.
Edward C. Banfield, The Unheavenly City, Boston, Little Brown, 1968.
Oscar Lewis, La Vida, New York, Random House, 1966.

Whatever one thinks of these writers, they were using the idea of culture in a consistent sense. The same cannot be said of writers who used the culture of poverty in its milder form. Consider Harrington writing in 1962:

> But the real explanation of why the poor are where they are is that they made the mistake of being born to the wrong parents, in the wrong section of the country, in the wrong industry, or in the wrong racial or ethnic group. Once that mistake has been made, they could have been paragons of will and morality, but most of them would never even have had a chance to get out of the other America.
>
> There are two important ways of saying this: the poor are caught in a vicious circle; or, the poor live in a culture of poverty.[8]

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[6] Edward C. Banfield, op. cit. In an appendix, Banfield presents a sample of other researchers' estimates of the size of the lower class. These estimates fall in a range of 15-20 percent, a figure that roughly equaled the proportion of the urban population who fell below the poverty line. Most of these estimates were, of necessity, based on definitions of lower class that differed from Banfield's since Banfield placed his greatest emphasis on present-time orientation, a concept that can best be measured in experimental situations.

[7] Daniel Patrick Moynihan, "The Negro Family -- The Case for National Action," Washington, D.C., United States Department of Labor, unpublished mimeo dated March, 1965, pp. 29-30.

[8] Harrington, op. cit., pp. 14-15.

In contrast to the anthropological definition, Harrington's definition of a culture of poverty is a very loose one. Yet he meant it to hold with precisely the same force. Once a man or woman was poor, they would have a great deal of difficulty leaving poverty as would their children.

The issue is more than academic because Harrington's definition was quickly adopted by government policy makers. The following quote appears from the Council of Economic Advisors' original treatment of poverty in 1964:

> Poverty breeds poverty. A poor individual or family has a high probability of staying poor. Low incomes carry with them high risks of illness; limitations on mobility; limited access to education, information, and training. Poor parents cannot give their children the opportunities for better health and education needed to improve their lot. Lack of motivation, hope, and incentive is a more subtle but no less powerful barrier than lack of financial means. Thus the cruel legacy of poverty is passed from parents to children.[9]

How did the Council staff know this? They did not know it and in fact, could not know it. The development of a poverty standard for the United States was only two or three years old and practically no longitudinal data existed which could have permitted tabulations of poverty from one generation to the next.

Nonetheless, the Council's paragraph, quoted above, soon became the norm. There was on the one hand a "culture of poverty," somehow defined, which precluded the poor from leaving poverty without substantial outside help (including an economic boom). There was on the other hand a poverty population defined by the Social Security Administration's Poverty Standard. And over the middle and late 1960's the two terms became close to interchangeable.

There were, perhaps, a half-dozen exceptions to this trend: Terrence Kelly's work for the President's Commission on Income Maintenance; various papers by John McCall; an extremely perceptive essay by Stephan Thernstrom;

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[9] Council of Economic Advisors, Economic Report of the President, Washington, D.C., Government Printing Office, January 1964, pp. 69-70.

The end result will be political. Before the decade is over, Congress again will have debated welfare reform, food stamp regulations, extensions of medicaid and other anti-poverty programs. Congressional decisions will depend in large part on public perceptions of poverty. If the public sees the poor as being mobile, or as being immobile for "acceptable reasons," their response will be sympathetic. If the public sees the poor as culture bound in lower class behavior, their response will be negative. In this sense, the extent of a culture of poverty matters a great deal.

and more recently the work of Jonathan Lane, Lester Klein, and members of the staff of the University of Michigan Survey Research Center.[10] But almost all these works were quite technical. The ideas they contained failed to reach a wide audience of policy makers, much less the general population. By the end of the 1960's, immobility of the poor was well established in the public mind; and people who were poor were part of the culture of poverty.

Does it really matter what the public thinks? I believe it does. Harrington and the Council of Economic Advisors were arguing for aid to the poor: If the poor were immobile, it was society's failing rather than the failings of particular individuals. But large segments of the population interpreted immobility in the opposite way.

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[10] Terrence F. Kelly, "Factors Affecting Poverty: A Gross Flows Analysis," in the Report of the President's Commission on Income Maintenance, Technical Studies Volume, Washington, D.C., Government Printing Office, 1968, pp. 1-81. But also see the criticism of Kelly's work by Thad W. Mirer, "Aspects of the Variability of Family Income," Madison, Institute for Research on Poverty, unpublished mimeo dated January, 1973, 19 pp.

McCall has written a number of papers and a book on this subject. One early example is John J. McCall, "An Analysis of Poverty: Some Preliminary Findings," Santa Monica, RAND Corporation Research Memorandum RM-61330EO, December 1969.

Stephan Thernstrom, "Poverty in Historical Perspective," Chapter 6 in Daniel P. Moynihan, ed. On Understanding Poverty, New York, Basic Books, 1969.

Lester Klein, "A Partitioning Algorithm for Studying the Income Dynamics of the Poor," Public Data Use, Vol. 1, No. H-3, July 1973, pp. 14-19.

Jonathan P. Lane and Frank Levy, "The Demographics of Low Income Households," unpublished memorandum noted as Task Force Paper K, HEW Task force on Welfare Reform, July 1973, 34 pp.

The Survey Research Center staff has issued to date three volumes of studies analyzing the Panel Study of Income Dynamics data. See their Five Thousand American Families -- Patterns of Economic Progress, vols. I, II and III. Ann Arbor, Institute for Social Research, of the Survey Research Center, University of Michigan, 1974 (vols. I and II), 1975 (vol. III).

APPENDIX B

THE ESTIMATION OF AN INDIVIDUAL'S WAGE

Wage estimates for individuals were patterned after those developed by Hall.[1] The actual format of the regression can be written:

(1) Estimating Equation for an Individual's Average Annual Wage

$$\text{In}\ (W_i) = f(X_{1i}, X_{2i}, \ldots\ldots X_{7i}) + \mu_i$$

where: W_i	is the individual's annual pre-tax earnings from labor divided by his total hours of work.
ln( )	refers to the natural log function.
X_1	is a set of 7 binomial dummies referring to age.
X_2	is a set of 7 binomial dummies referring to education.
X_3	is a set of 4 binomial dummies referring to the region of residence.
X_4	is a set of 3 binomial dummies referring to the distance from the individual's residence to a city of 50,000 or more.
X_5	is a binomial dummy which is 1 if the person has any work-limiting disability.
X_6	is a binomial dummy which is 1 if the person belongs to a union (males only).
X_7	is a binomial dummy which is 1 if the person is a farmer (males only).
μ_i	is a stochastic error term associated with the individual.

In Table B-1, I present examples of estimated coefficients for white and non-white male heads. In Table B-2, I present wage estimates for individuals with selected characteristics.

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[1] See Robert E. Hall, "Wages, Income and Hours of Work in the U.S.," Chapter 3 in Glen G. Cain and Harold W. Watts, eds., Income Maintenance and Labor Supply, Chicago, Rand McNally, 1973.

Each regression is done in a reference group format. The constant term refers to the wage of a person with characteristics of the reference group. Each variation of a characteristic and the coefficient of that variable refers to the change in wage caused by that variation.

The reference group characteristics for men and women are listed below:

Characterisitcs of the Reference Groups for Male Household Heads

Characteristic	Value	Women
Age	25-34 years	25-34 years
Education	12 years	12 years
Residence distance to a city of 50,000 or more	less than 5 miles	less than 5 miles
Residence Region	Northeast	Northeast
Union Membership	No	NA
Disability	No	No
Farmer	No	NA

TABLE B-1

ESTIMATED COEFFICIENTS OF WAGE REGRESSIONS

	White Male Heads	Non-white Male Heads
Age		
18-19	-.538 (.144)	-.058 .157
20-24	-.343 (.057)	-.317 .157
25-34	—	—
35-44	.233 (.042)	.087 .053
45-54	.273 (.348)	-.018 .016
55-64	.211 (.045)	-.031 .046
65-99	-.130 (.044)	-.492 .347
Years of Education		
Education 1-3	-.371 (.134)	-.514 .128
Education 4-[illegible]	-.316 (.065)	-.310 .077
Education 7-9	-.242 (.042)	-.137 .589
Education 10-11	-.077 (.038)	-.133 .271
Education 12	—	—
Education 13-14	.085 (.039)	+.064 .032

TABLE B-1 cont'd.

	White Male Heads	Non-white Male Heads
Education 15	.162 (.073)	+.021 .036
Education 16	.267 (.021)	.423 .142
Education Over 16	.454 (.045)	.834 .178
Region of Residence		
Northeast	—	—
Northcentral	-.021 (.042)	.159 .106
South	-.130 (.021)	-.080 .021
West	.001 (.001)	.230 .373
Distance from a City of 50,000 or More		
Less than 5 miles	—	—
5-15	.117 (.032)	-.015 (.011)
Over 15 miles	.001 (.034)	.005 (.003)
Union Status		
Non-union	—	—
Union	.121 (.024)	.340 (.062)
Disability Status		
Non-disabled	—	—
Disabled	-.101 (.068)	-.030 (.138)

TABLE B-1 cont'd.

	White Male Heads	Non-white Male Heads
Occupation		
Not a Farmer	—	—
Farmer	-.700 (.068)	-.352 (.138)
Constant	1.068 (.043)	.796 (.063)
R^2	.40	.4231
S.E.E.	.440	.467
N	1531	719

TABLE B-2

ESTIMATED 1967 WAGES FOR INDIVIDUALS WITH SELECTED CHARACTERISTICS

	White Male Heads	Non-white Male Heads	White Male Heads	White Male Heads
Reference Group	$3.20	$2.47	$2.32	$2.22
Varying Age				
18-19	.179	2.33	1.97	1.92
55-64	3.95	2.52	2.36	2.78
Varying Education				
6th Grade Education	2.34	1.8.	1.56	1.62
College Education	4.18	3.77	3.07	3.24
Varying Region				
South	2.81	2.28	1.87	1.60

APPENDIX C

HOW PERMANENT ARE LOW WAGES?

In Section II, I showed that working men and women in the target population received wages systematically lower than the wages I estimated they should receive.[1] If actual wages were randomly distributed around their estimated values, it would be reasonable to expect these men and women to move toward their estimated wages in the future.

There is, however, the possibility that a given individual differs from the rest of the population used to estimate the wage. For this individual, the estimated wage has no long run significance. A statistical test for such an individual is made by comparing the difference between his actual and estimated wage -- i.e., his prediction error -- with the standard error of the regression. If the prediction error is greater than, say, two standard errors, I can reject the hypothesis that the individual belongs in the general population. In this case, I cannot assume his estimated wage is the true mean of his wage distribution. If prediction error is less than two standard errors, the estimated wage serves as the long run expectation of the individual's wage.

The test just described assumes individual prediction errors are truly stochastic. In fact, errors may arise because the model has been incompletely specified. An individual may possess very high motivation, he may be an alcoholic, he may have a prison record, he may have a great deal of informal training. All of these factors will affect his wage rate but it is possible that none of them appears in the Panel Study data.

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[1] The calculation of the estimated wage is described in Appendix B.

If these unobserved variables exist, they will be reflected in the individual's prediction error. Only a portion of the error will be truly stochastic and, as a result, the estimated standard error of the regression will be too large.

When these unobserved variables exist, the statistical test described above will be too loose. It will compare prediction errors to an estimated standard error that is too large because it includes both stochastic variations and nonstochastic variations in unobserved individual characteristics.

I describe below a single, approximate correction for this situation. I begin by postulating a fixed effects model where the error term associated with an individual's wage can be divided into two pieces. One, μ_{it}, is a fixed factor associated with that individual and designed to capture his individual characteristics. The other, ϵ_{it} is the normal error term. This model is displayed in Equation (1) below.

$$\text{(1)} \quad \ln(W_{it}) = f(X_{it}) + \mu_{it} + \epsilon_{it}$$

where: ln refers to the natural log function

W_{it} is the i'th individual's wage in year t

X_{it} is the vector of observed independent variables for the i'th individual

μ_{it} is a term that captures the individual's constant observed characteristic

ϵ_{it} is a stochastic error term

And I assume that:

$$\mu_{it} = \mu_i \text{ for all } t$$

$$\underset{i}{E}(\mu_{it}) = \underset{t}{E}(\epsilon_{i,t}) = 0$$

$$E(\mu_{it}, \epsilon_{i,t+k}) = 0. \text{ for all } k$$

$$\underset{t}{E}(\mu_{it}, \mu_{i,t+k}) = \sigma^2_\mu \text{ for all } k$$

$$E(\epsilon_{it}, \epsilon_{i,t+k}) = \begin{cases} \sigma^2_\epsilon & \text{for } k = 0 \\ 0 & \text{otherwise} \end{cases}$$

Define (e_{it}) as the i'th individual's estimated prediction error in period t: that is, the difference between the natural log of his actual wage and the natural log is his estimated wage. Given the assumptions above, it can be shown that:

$$(2) \qquad E(e_{it}^2) = \sigma_\varepsilon^2 + \sigma_\mu^2$$

And:

$$(3) \qquad \rho(e_{it}, e_{it+k}) = \frac{\sigma_\mu^2}{\sigma_\varepsilon^2 + \sigma_\mu^2} \text{ for all } k$$

Equation (3) refers to a situation where wage equations are estimated for the same individuals in two different years. The term $\rho(e_{it}, e_{it+k})$ refers to the simple correlation between an individual's prediction error in year t and year t + k. The equation says that this correlation equals the percentage of the regression's estimated variance that is not stochastic. Correspondingly, the statistical test described at the beginning of this section must use a standard error that has been corrected by the term $\sqrt{1-\rho}$.

Table C-1 contains correlations of error predictions for various groups in the target and counterpart populations.[2] The data indicates that error predictions are fairly stable from year to year. This suggests these regressions contain systematic, unobserved components that are constant for individuals over time. Moreover, this component seems roughly as stable for members of the target population as for the population at large. Within each group, the term, ρ, in Equation (3) refers to the correlation for the total population.

Table C-2 presents the data necessary to test the hypothesis presented at the beginning of this section. Specifically, the null hypothesis, Ho, states that an individual's estimated wage is the true mean of his wage distribution. This hypothesis will be rejected if the individual's prediction error is greater than (1.96 x corrected standard error of the regression).

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[2] Correlations were calculated for those people who worked in 1967 and 1968 and 1971.

TABLE C-1

CORRELATIONS OF PREDICTION ERRORS FROM WAGE EQUATIONS

Characteristics of Person in 1967	1967-68	1967-71	Number of Observations
White Male Heads			
Target Population	.21	.42	57
Counterpart Population	.55	.43	1,222
Total Population	.57	.41	1,278
Non-white Male Heads			
Target Population	.45	.36	158
Counterpart Population	.42	.64	397
Total Population	.46	.64	555
White Female Heads			
Target Population	.80	.55	11
Counterpart Population	.64	.52	124
Total Population	.68	.58	135
Non-white Female Heads			
Target Population	.23	.34	92
Counterpart Population	.77	.67	113
Total Population	.72	.70	205

TABLE C-2

TEST OF HYPOTHESIS THAT THE ESTIMATED WAGE IS THE MEAN OF THE WAGE DISTRIBUTION FOR THE REPRESENTATIVE INDIVIDUALS HEADS*

	(1) Prediction Error for the Representative Individual	(2) Standard Error of the Regression	(3) Corrected Standard Error	(4) Ratio of (1)/(3)	(5) Corrected Standard Error for the Group
White Male Heads	.432	.467	.306	1.41	.041
Non-white Male Heads	.305	.485	.357	.855	.028
White Female Heads with Children	.520	.523	.246	1.75	.089
Non-white Female Heads with Children	.128	.488	.258	.495	.0269

Column 1 of the table contains prediction errors for representative individuals, individuals whose characteristics equal the group average characteristics of Table 14 in Section III. These errors have been converted into the natural logarithms of the original regression.

Column 2 contains the standard error of each regression and Column 3 contains the standard errors corrected by the 1967-1968 total population correlation coefficients listed in the Table C-1.

Column 4 contains the ratio of the prediction error to the corrected standard error. In no case does this exceed the critical value of 1.96. Correspondingly, I cannot reject the hypothesis that the estimated wage is the true mean of the wage distribution for these four representative individuals.

Finally, I can reapply the test in a stronger fashion to each group as a whole. Consider the group of all white male household heads in the target population. Is it reasonable to expect that these men, as a group, have a distribution of wages whose mean is the mean expected wage reported in Table 14. Here, a similar test applies except that it is now a test of sample means. Correspondingly, the corrected standard error in Column 4 must be divided by the square root of the number of people in the group, in this case 57. For each group, the prediction error is roughly 10 times as large as the group standard error. Correspondingly, I reject the null hypothesis for all four groups.

The conclusions can be interpreted through the help of an example. Consider a non-white male household head whose actual 1967 wage was $1.33 and whose estimated wage was $2.03 -- an individual whose actual and estimated wages equaled the group averages in Table 14. The calculations in Table C-1 indicate the individual's prediction error is .305 while the corrected standard error of the non-white male wage regression is .357. Correspondingly, I cannot reject the hypothesis that $2.03 is the true mean of the individual's wage distribution.

Conversely, consider the group of all non-white male household heads tabulated in Table 14. Is it reasonable to believe that as a group their wages came from a distribution whose true mean was $2.03? Here again, the prediction error is .305 but the standard error is .357 divided by the square root of 158, the number of people in the group. The resulting ratio to standard error is 10.7, more than enough to reject the hypothesis.

In summary, it is reasonable to believe that a number of individuals within the target population will return to their estimated wages, but it is unreasonable to believe that all individuals in the target population will return to their estimated wages.

APPENDIX D

THE CALCULATION OF ESTIMATED INCOME

In this appendix, I briefly discuss the calculation of estimated income. I present examples for households with selected characteristics. Copies of full estimates used in the calculations are available on request.

Estimated income, as described in Table 20, is calculated using the following relationships:

$$(1)\quad Y^R_{67} = Y_{67} - Y^H_{67} - Y^W_{67}$$

$$(2)\quad EY_{68} = Y_{67} \times 1.049 + EY^H_{68} + EY^W_{68}$$

where:

Y_{67}	refers to the household's total 1967 pre-welfare money income
Y^H_{67}	refers to the husband's income from labor in 1967
Y^W_{67}	refers to the wife's income from work in 1967
EY_{68}	refers to estimated 1968 household income
EY^H_{68}	refers to the husband's estimated labor income in 1968
EY^W_{68}	refers to the wife's estimated labor income in 1968
Y^R_{67}	refers to "residual" 1967 income - household income not associated with the husband's or wife's labor
1.049	refers to the rise in the cost of living between 1967 and 1968

Estimated labor income was calculated by multiplying the individual's estimated 1968 wage by the individual's 1968 estimated hours or labor.

The method of estimating wages was detailed in Appendix B.

Labor supply equations for males were estimated in a fashion identical to that of Hall,[1] except that the sample consisted of all members of the population rather than low income members. Explanatory variables included estimated wage, whole income, the presence of pre-school children in the family, the presence of school age children in the family, whether the individual was either farmer or self-employed and a psychological planning index to measure differences among indviduals.[2] The limited number of observations for some types of individuals required that observations be pooled in the following groups:

White male heads of household under 55

Non-white male heads of household under 55

White and non-white male heads of household over 55 (with race added as a variable)

Labor supply estimates for wives were complicated by the fact that large numbers of women report no hours working, a problem I discussed in Section VII in connection with the estimation of labor supply for female household heads. I approached the problem of estimating labor supply curves for wives in a manner similar to the procedure I outlined for female household heads in Section VII I divided wives into three groups: those who worked less than 500 hours, those who worked between 500 and 1,500 hours, and those who worked more than 1,500 hours. In practice, 62% of the group were in the first group, 16% were in the second, and 22% were in the third. The means of the classes were 42 hours, 997 hours, and 1,959 hours.

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[1] See Robert E. Hall, "Wages, Income and Hours of Work in the U.S.," Chapter 3 in Glen G. Cain and Harold W. Watts, eds., Income Maintenance and Labor Supply, Chicago, Rand McNally, 1973.

[2] The Panel Study also includes what it calls an index of ambition but the actual questions seem more directed at measuring dissatisfaction with one's current circumstances. With such questions, ambition might be as strongly correlated with a low number of hours as with a high one. I experimented with the ambition index in the estimates in Table 11 but it proved insignificant.

I then estimated the probability that a wife with given characteristics would work in each class. Explanatory variables were the woman's estimated wage, her age, the presence of a child under six, her whole income, her race and her region of residence.

Table D-1 contains 1968 estimated incomes (EY_{68}) for households with various characteristics. The calculations are meant to be suggestive. Individual calculations were made according to the actual characteristics of each household.

TABLE D-1

ESTIMATED 1968 INCOMES FOR COUPLES WITH SELECTED CHARACTERISTICS*

Age of Husband and Wife	Education of Husband and Wife	White	Non-white
19 years	8 years	$ 6,123	$ 4,419
	10 years	6,195	5,033
	12 years	6,800	5,469
24 years	10 years	7,584	6,017
	12 years	7,977	6,464
	College	13,331	10,694
35 years	10 years	10,432	7,020
	12 years	11,291	7,972
	College	20,002	17,458
60 years	10 years	7,590	6,656
	12 years	10,471	5,896

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*Calculations are made using the following assumptions. Couples derive all income from labor; each family has only the husband and wife as potential earners. The couple aged 19 has at least one pre-school child. The couples aged 24 and 35 have at least one pre-school child and one child in school. The couple aged 60 have no children living at home. All couples live outside the South and no husband is a farmer or is self-employed.

COUNTY WELFARE: CASELOAD GROWTH AND CHANGE IN ALAMEDA COUNTY, CALIFORNIA, 1967-73

by

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COUNTY WELFARE: CASELOAD GROWTH AND CHANGE IN ALAMEDA COUNTY, CALIFORNIA, 1967-73

Michael Wiseman[*]

Nineteen seventy-five marked the end of a decade of extraordinary growth in the Aid to Families with Dependent Children (AFDC) program. In January of 1965 there were slightly over a million AFDC cases nationwide; 4.4 million people were receiving benefits through the system. Ten years later the caseload had tripled. In January 1975, 11 million people were beneficiaries of the AFDC transfers. A program that cost about 1.6 billion in 1964 cost taxpayers almost 8 billion ten years later.[1]

That was the bad news. The good news was that while the program had grown by an incredible 35 percent in 1970, the rate of growth had declined to 1 percent in 1973.[2] The welfare explosion is clearly over. Now that the dust has settled, it is appropriate to ask what happened, and why. Once these questions are answered, it will be possible to speculate about the prospects for a recurrence.

In this paper I will address these questions on a very small scale using data developed from a series of cross-section samples of recipients in the AFDC program in Alameda County, California. Alameda County isn't the United States, and it doesn't account--geographically or demographically--for a particularly large proportion of California. In March 1970 families on assistance in Alameda County accounted for 1 percent of the national caseload and about 6 percent of AFDC recipients in

California.[3] But the county is urban, and it includes a city, Oakland, that "enjoys" most of the problems that beset older metropolitan areas in other parts of the country. The AFDC caseload in Alameda County exploded at about the same time the national caseload did, and, like the national caseload, the rate of caseload increase has declined substantially in subsequent years. These factors make Alameda County's experience relevant to interpretation of national trends in welfare caseload growth.

My description of what happened to the caseload during this period is organized below in six sections. The first outlines the rules for eligibility and payments determination under AFDC. The second provides background information on the AFDC program in Alameda County, describes my procedure for collecting data on recipients there, and is concluded with some original estimates of the total number of families receiving public assistance in various years covered in this survey. Section three describes the changing demographic composition of the caseload and the background of welfare recipients. In section four I discuss the role of administrative factors in determination of welfare benefits and eligibility. Section five is devoted to case dynamics--frequency of closure, spells on welfare, and reasons for termination. I summarize my answers to the question "what happened?" and my speculation concerning "what will happen?" in section six.

I. Eligibility Determination and Benefit Payments in California AFDC

A. Introduction

Standards for eligibility and payments in the AFDC program have changed in a variety of ways during the past ten years. The discussion here is organized around the standards as they existed on March 1, 1970--more or less the midpoint of the decade. As is the case in normal welfare operation, I will consider determination of eligibility separately from determination of payments. After describing the 1970 system, I will outline the changes that led up to that program and those that followed.

I emphasize those changes that potentially expanded or reduced the eligible population. Interpretation of case data later in the paper is affected in an important way by whether or not one believes changes in caseload composition are the result of extension of welfare into a fixed population of eligible families or the result of extension of welfare eligibility to larger segments of the population as a whole.

Readers who are familiar with operation of AFDC from other sources or my own papers[4] may choose to skip directly to Section III. Unfortunately, there aren't too many different ways to tell the story that follows, and methods of making welfare regulations exciting have so far eluded me.

A family's payment from welfare in California is dependent on its "need," its composition, and the method-of-payment calculation currently in effect. Below, I discuss first the meaning of "need," demographic factors related to aid eligibility, measurement of resources for eligibility determination, and, finally, calculation of payments.

B. The Determination of Need

Welfare has always been intended, at least in the popular view, for people in *need*. The heart of the system is an official definition of deprivation adequate to justify public transfers.

In California, in March 1970, need was summarized in regulations published by the then State Department of Social Welfare in a table of necessary consumption expenditures. Amounts varied by family composition and county of residence and were listed separately for utilities, housing, food, and individual and group needs. Calculation of need for two sample families is illustrated in table 1.

The need standard has changed more-or-less annually in California since 1965, primarily because of changes in the cost of living. Measured in constant dollars, it has remained virtually unchanged. As a result, *none* of the changes in the caseload which occurred during the last decade can be attributed to relaxation of the basic need standards applied to families on welfare intake. However, it is possible to have, in addition to the standard needs identified in the table, certain special needs for one-time expenditures (a move required because current living quarters are unsuitable) or of longer duration (a supplemental diet for pregnancy). Identification of such needs is an important area of caseworker discretion. Special needs potentially allow welfare eligibility to be retained or obtained by families with incomes large enough to preclude assistance should only the basic eligibility standard be applied. No published data are available on the extent of special needs among welfare families or variation in the frequency of special needs identification over time.

Prior to October 1971, the nonfederal share of costs attributable to payments for special needs were shared between state and county governments. As a result of the California Welfare Reform Act state participation in such payments was eliminated. One suspects that the counties responded to the financial incentives so created by cutting down on identification of special needs. This hypothesis will be investigated in section IV. If it was true that prior to October 1971 some families attained and maintained eligibility only because of inclusion of special needs, then this restriction reduced the eligible population.

C. Family Composition, Work, and Residency Requirements

Once the "need" of the family is determined, establishment of eligibility requires comparison of family resources to the needs' standard and satisfaction of certain family compositional requirements. I discuss the composition requirements first and then outline assessment of resources.

The composition standard is simple: Basically, the family must include children and must not include their father if he is employed full time unless the mother is absent, incapacitated, or unemployed.

The object of the AFDC program since its origin in the Social Security Act in 1935 has been to provide assistance to children deprived of parental support or care through lack of resources, disability, or abandonment. In California, a child is eligible for support from verified conception to the 21st birthday. If the child is 16-17 years old, he or she must be in school, disabled, or working to accumulate money for education; if 18-20, he or she must be in school. If there is only one adult in the family, the only other qualification necessary for AFDC payments is financial.

TABLE 1

MINIMUM BASIC STANDARD OF ADEQUATE CARE (NEEDS)
SAMPLE FAMILIES, ALAMEDA COUNTY, MARCH 1, 1970

Item	Mother and Two Children	Mother, Two Children, and Unemployed Father
Maximum housing allowance (allowance varied with actual cost of housing)	$124.00	$124.00
Utilities	13.60	13.90
Food		
Mother	27.45	27.45
Child ≤ 6	19.80	19.80
12 > child > 6	26.05	26.05
Father		32.15
Individual needs		
Mother	16.05	16.05
Child ≤ 6	8.10	8.10
12 > child > 6	12.60	12.60
Father		17.60
Other FBU needs	23.30	29.30
Monthly totals	$270.95	$327.00
Annual totals	$3,251.40	$3,924.00

Source: Doolittle and Wiseman, *op. cit.*, pp. II. 31-32.

For two-parent households, eligibility requirements are more complex. They depend upon the nature of the relationship between the adults and, if the father is present, his employment status. If the male present is not the natural father of the children and has not adopted them, the family can receive payments on behalf of the children if the male cannot provide sufficient support to meet their needs. If a stepfather refuses to support his wife and own children, the support provided by the county is increased, but the stepfather is subject to legal action. A "male assuming the role of spouse (MARS)" must contribute what it would cost him to live separately.

If both parents are present in the household, children (and their parents) can be eligible for support on the basis of physical or mental incapacity of one or both parents. A father in incapacitated if he is unable to hold a full-time job. A mother in incapacitated if she is unable, for physical or mental reasons, to provide her children with normal care. If neither parent is incapacitated, eligibility can be established on the basis of unemployment of one of the parents.

Throughout the period under consideration, California was more generous in its acceptance of unemployment as grounds for deprivation than federal standards required. In March 1970, this category was satisfied if either parent was involuntarily working less than seven-eighths of the standard of full-time employment for the industry in which he or she was typically employed. In general, this meant they were employed less than 152 hours per month. The federal minimum definition of "unemployment" at that time was involuntarily working less than three-fourths of full time per month while the permitted maximum was anything less than full time. California exercised the state's option to use a definition more generous than the minimum requirement.

Other features also made California's criteria for determination of AFDC eligibility on the basis of unemployment more generous than that found elsewhere. The federal government contributed to support of children deprived solely on the basis of the unemployment of a parent only if (a) the *father* was unemployed, (b) the father had an "established connection with the labor force," (c) the father had been unemployed for more than thirty days, and (d) the father was not receiving unemployment insurance benefits (UIB). In contrast, California (a) at least technically, permitted either parent to satisfy the condition;[5] (b) required that the father simply be looking for a job, or that the mother be looking for a job and be able to demonstrate an adequate plan for child care should she find one; (c) required no minimum amount of unemployment; and (d) permitted AFDC payments to a worker's family even if he or she were drawing UIB.

If a family qualified for assistance under California law but did not qualify by federal standards, the state and county in which the family resided picked up the entire bill. Regardless of source of support, families qualifying for benefits under the unemployment provisions of AFDC are classified as recipients in the AFDC-U program; all others are in AFDC-FG (Family Group).

It is worth repeating here what is surely common knowledge: The important group excluded by these regulations is made up of two-parent families with heads working full time at low wages--the working poor.

In 1970, referral to the state employment service for assistance in job search was essentially voluntary for heads of AFDC-FG households. Mothers were required to apply for and accept bona fide offers of employment only if such employment could be shown to be nondetrimental to the welfare of the family, "adequate" child care was available, and she was capable of meeting both homemaking and employment responsibilities. In general, recipients qualifying under AFDC-U were subjected to more strenuous requirements, including a mandatory referral to the Work Incentive Program within thirty days of initial receipt of aid. WIN could mean a variety of things for participants; frequently, it was little more than a referral to the state employment service for regular job placement. To the extent that slots were available, recipients were placed in on-the-job or classroom-training programs. Refusal to participate in WIN activities or to accept bona fide job offers was followed by a sixty-day counseling period; if, after sixty days, the recipient remained recalcitrant, he or she could be deleted from the budget for the family involved. Establishment of family welfare eligibility was not conditional at this time upon response to employment or

WIN referral, but continued payments on behalf of employable family members was.

Finally, since the Supreme Court struck down duration-of-residency requirements for welfare in *Shapiro v. Thompson* in 1969, potential recipients were required only to show that they had established a permanent address in the county. Prior to the *Shapiro* decision, families could not qualify unless they had lived in the state for a year prior to application for aid.

Aside from the duration of residence restriction, most of the demographic qualifications for AFDC have not changed over the decade under discussion. The most significant alterations have occurred in the definition of "unemployed" used in determination of eligibility for payments under AFDC-U and in the obligation of new recipients to register for employment referral and services. Before November 1, 1969, a family could qualify for assistance on ground of unemployment if the father or mother had involuntarily worked less than 173 hours in the month prior to application. This was reduced to less than 152 hours in November 1969 and was supplemented by the specification that the unemployed adult work less than thirty hours per week. The standard was reduced again in July 1971 to 130 hours per month, or not more than 30 hours per week. The most recent reduction to the federal minimum of 100 hours per month, or 23 hours per week, occurred in October 1971. The standard has remained at the lower level since 1971. Although a substantial proportion of poor heads of households work all year, it would seem likely that, had the criteria for AFDC-U eligibility been widely know, most poor, two-parent families in California could have qualified for payments under AFDC-U at one time or another in 1970, given the extremely loose definition of unemployment then used. The tightening of the definition since that time has undoubtedly lowered the number of two-parent families eligible for assistance.

To appreciate the (relative) generosity of the AFDC-U program in 1970, recall that on March 5, 1970, the House Ways and Means Committee voted 21 to 3 to report the Family Assistant Act of 1970 to the House of Representatives.[6] FAP guaranteed $1,600 per year to a family of four with no other income; California's AFDC-U "guaranteed" $2,292 to such families, plus a more generous treatment of earnings over a broad range, as long as one parent in the family satisfied the employment criterion for eligibility. This California guarantee had been in effect since the early 1960's. More will be said about payments later.

The Work Incentive Program was substantially revamped by Congress in 1971. The new WIN ("WIN II") regulations became applicable in Californis on July 1 of the following year; these changes appeared in the regulations manual maintained by the State Department on Social Welfare on September 4. A large number of changes in the regulations occurred. The principal results were (a) to reduce the number of recipients exempt from employment training or obligation to seek means of self-support, (b) to make registration for WIN for nonexempt recipients a condition of *eligibility* for benefits, and (c) to remove responsibility for determination of which recipients are appropriate for manpower training from the services staff of the welfare agency to a Department of Labor certified state manpower policy agency--the California Employment Development Department.

The WIN II requirements restricted the AFDC eligible population to the subset with heads willing to register for work or undergo training. I do not believe this proved a significant constraint on the eligible population, if it did so at all, until at least 1973.

D. Resources

Family eligibility for AFDC, given satisfaction of demographic criteria for AFDC, is determined by comparison of resources of the family budget unit to which the child belongs to the needs standards. The resource regulations concentrate on the definition of net income--current income available for meeting consumption needs--plus identification of the share of a family's wealth that the state expects it to use toward meeting its consumption requirements.

All recurrent payments received by the household, plus earnings minus work expenses, constitute net income. The imputed rental value of an owner-occupied home was included in "recurrent payments." Work expenses allowed in March 1970 included involuntary deductions--social security, withholding tax, and the like--plus a standard work allowance of up to $25 per month (the amount prorated by the number of days worked), plus other work-related outlays. The "other" category for work expenses was quite elaborate, including transportation (at 4¢ per mile), tools and licenses, job-related educational and training expenses, child care, and even telephone service if the recipient could make a convincing case that a telephone was needed in connection with employment. These items were permissive, not mandatory. Considerable discretion was allowed caseworkers in assessment of actual work expenses.

In 1970, a family could not become eligible for welfare payments if it possessed real property with an assessed value of $5,000 after deduction of encumbrances. The state required recipients to utilize all real estate other than homes "to provide for the needs of the child or his parents or both." In addition to the limitation on real estate, a family could not have personal property with value in excess of $600 unless it could be demonstrated that such property was essential to its "plan" for achieving self-support. Hence, it might be possible to keep a truck if it could be shown that, by using the truck, the family might eventually earn enough to leave welfare. The $600 limitation did not apply to household furnishings.

In general, nonrecurring lump-sum payments (divorce settlements, inheritances, Irish Sweepstakes payments, etc.) were ignored in assessing income unless they increased assets above the maximum permitted levels described below. This situation could be avoided, however, by applying such money to the purchase of household furnishings or other assets not included in the state regulations in the evaluation of wealth.

Neither the income or property treatment described in the state's welfare regulations changed significantly during the ten years considered here. However, inflation has made the property limitations much more significant now than was the case at the beginning of the period because the dollar amounts permitted by the regulations have not changed. A reasonable conjecture is that this decline in the real value of assets permitted welfare recipients has reduced the number of families eligible for assistance. No hard data exist to confirm this hypothesis or to permit assessment of the extent of the constraint.

In practice income or property treatment may have changed considerably due to variations in the intensity of regulation application. The regulations in effect call for a detailed inventory of personal possessions and work expenses. Caseworkers and eligibility technicians could make the standards generous by choosing to de-emphasize the assets restrictions, to augment estimated "need" of applicant families by identifying as many special requirements as possible, and to seek out for working recipients all permitted work-related expenses. The same standards could be rendered miserly by caseworkers and eligibility technicians who rigorously applied the assets reductions, ignored special needs, and failed to mention to working recipients the desirability of reporting all work-related expenses.

As I describe later, there is some reason to believe that like "special needs," work expenses were treated more generously by caseworkers and eligibility technicians before October 1971 (the date of implementation of the California Welfare Reform Act) than was the case afterward, This change may have significantly constrained the number of AFDC eligible families in the county.

The discretion granted caseworkers was a source of inequity in treatment of recipients. A second factor creating such inequity resulted from the AFDC monthly accounting convention. Because resources were measured on a monthly basis, some families with erratic or seasonal income recive AFDC benefits for part of the year even though should their total incomes have accrued evenly over twelve months their resources would preclude eligibility. This means the system favors those with variable incomes over those with study incomes that cumulate to the same annual total. In 1970 a teacher in the Oakland school system applied for and received benefits during the summer even though her annual income exceeded \$10,000.[7] This *cause célèbre* and related cases resulted in special legislation precluding benefits in nonworking months for persons working eight or more months on an annual contract, but this change affected only a small fraction of the variable income cases.

E. Payments

Payment Calculation in March, 1970

Payments under the AFDC system are based on both the standard of need and schedule of maximum payments in which the state would financially participate. In all cases these maximum payments are less than the standard of need. For example, the maximum payment in March of 1970 for a female-headed family such as that for which needs are calculated in table 1 was \$172 (compared to "needs" of \$271). If a male was present the maximum payment increased to \$191, compared to "need" of \$327. This differential made living on welfare alone a matter of bare subsistence. It also increased employment incentives and created a wide range of income consistent with retention of welfare eligibility for families once such eligibility was established.

This effect is best understood in context of a discussion of calculation of benefits for families with outside earnings and/or income.

In these examples I will concentrate on the three-person, female-headed family introduced in table 1. For families in the AFDC-U program the payments calculation procedure is the same, but payments calculated for each hypothesized earnings change are predicated on the assumption that the unemployed member of the household continues to work less than 152 hours per month and is able to satisfy the county welfare department that he or she is looking for, but cannot find, more.

If the woman takes a job, the calculation of her grant is dependent on the amount of her work expenses and her earnings. For simplicity I assume that withholding taxes plus mandatory social security payments amount to some constant fraction of gross pay. Let t_w, X_w, E, N, and M denote the "withholding rate," work expenses, gross earnings, need, and maximum payment, respectively (this and other notation to be used in the payment examples is summarized in table 2 below). Using this procedure, calculation of payments took place in six steps:

(1) Subtract from net earnings $[E(1-t_w)]$ work expenses. As described earlier, work expenses included for full-time workers $25 plus other costs attributable to employment, including child care.

(2) Subtract from the result in step 1 $30 plus 1/3 of the (positive) difference between $30 and 1/3 of gross income.

(3) If the result of step 2 is negative, ignore earnings altogether in grant calculation. If positive, add the result to other outside income received by the family (denoted I). This sum is *countable income*.

(4) If countable income is less than or equal to the difference between family need and maximum payment, no reduction in the welfare grant occurs. Thus $P = M$ if

$$N - M \geq E(1-t_w) - X_w - \$30 - (1/3)(E-\$30) + I \qquad (1)$$

(5) If countable income exceeds the difference between maximum aid and needs, the payment is reduced a dollar for each dollar of countable income over the gap. Thus

$$\begin{aligned} P &= M - \max[\text{Countable Income} - (N-M),\ 0] \\ &= M - [E(1-t_w) - X_w - \$30 - (1/3)(E-\$30) + I - (N-M)] \qquad (2) \end{aligned}$$

if countable income > (N-M). Rearranging, (2) implies

$$P = N - E(1-t_w-.33) + X_w + \$20 - I \qquad (3)$$

(6) If P in (3) is ≤ 0, welfare eligibility is lost.

The procedure outlined above has a number of important features:

(1) *The "marginal tax rate" on earnings is zero over a substantial range.* Denoting the level of gross earnings at which payments begin to change with increases in earnings as E^*, solution of expression (1) for this E value that established the equality indicated

$$E^* = \frac{N - M - I + X_w + \$20}{1 - t_w - .33} \qquad (4)$$

For simplicity I assume that mandatory taxes and social security payments amount to about 1/9 of gross earnings, work expenses are $50 per month and invariant to earnings, and no outside income is received. Under these assumptions $E^* = \underline{\$304.20}$. If in 1970 the woman used here as an example earned a gross income of \$2.25 per hour, she could work over 135 hours a month before losing any portion of her welfare payment. Note that the greater the gap between needs and maximum payment, the greater the range of earnings over which no benefits loss occurs.

(2) *The amount of earnings required for loss of eligibility was about equal to the average hourly earnings of most private sector employees.* Retaining the assumptions introduced above, expression (3) can be solved for E^{**} , the gross earnings level at which payments become zero and eligibility is lost. This is

$$E^{**} = \frac{N - I + X_w + \$20}{1 - t_w - .33} \tag{5}$$

For our example (assuming $I = 0$), $E^{**} = \$613.80$. Full-time employment with no overtime amounts to at most 173 hours per month. Under the most severe assumptions the woman in my example would have to gross \$3.55 per hour to lose eligibility. A woman considering a full-time job at \$2.25 per hour would have (under our assumption) a take-home pay of about \$346. Since $\$304.20(E^*) < \$346(E) < \$613.80(E^{**})$, she would continue to receive benefits of (from (3)) \$148.78, a reduction of \$23.22 from benefit levels with no earnings at all. Considered as a proportion of her take-home pay minus work expenses (\$296), this amounts to only about an 8 percent average tax rate.

(3) *Work expenses and need estimates have a leverage effect on the gross earnings "tax point" E^* and the cutoff value E^{**}.* Every dollar of allowable work expenses or estimated need moved E^* and E^{**} by

more than a dollar: in this example the shift is by \$1.80. Hence, if child care costs increase work expenses from \$50 to \$100 for my example female household head, both critical values would go up by \$90. The work expenses-needs lever gave local caseworkers and welfare administrators important discretionary power over effective welfare tax rates. To the extent caseworkers or client organizations sought out allowable deductions or special needs for working recipients, the AFDC "tax rate" declined. If caseworkers resisted consideration of such expenses, the effective tax rate increased. Changes in administrative leniency in work expense evaluation could over time have effects on work incentives of magnitude comparable to those installed by Congress through statutory change.

(4) *Benefits are available to families on welfare even after earnings rise to levels which would preclude eligibility on intake.* This observation is hardly original, but it is usefully reviewed. Broadly speaking, a family was eligible for aid in California in March of 1970 if income net of involuntary deductions and work expenses was less than the standard of need, i.e.,

$$N > E(1-t_w) - X_w + I \qquad (6)$$

The eligibility threshold stated in terms of gross earnings is therefore

$$\hat{E} = \frac{N + X_w - I}{1 - t_w} \qquad (7)$$

If $\hat{E} > E$, the household is eligible to enter the system. Once on welfare, however, earnings must rise to E^{**} (see expression (5)) which is always greater than the threshold. The difference is substantial. In our example, $\hat{E}$ is (with no outside income) \$383.62; as indicated earlier E^{**} is \$613.80. A woman with earnings of \$400 per month would be ineligible for welfare. However, if she had increased her earnings to \$400 after having attained eligibility on the basis of earnings of \$375, she could collect a monthly welfare payment of \$118.78.

The consequence of this feature is that the eligible population is in part determined by the number of families which have achieved welfare eligibility in the past. Potentially, every family with gross earnings less than E^{**} could achieve eligibility at some time by allowing earnings to fall to $\hat{E}$ and then working up to the previous level.

Changes in Payment Calculation Procedures

The procedures for computing welfare payments changed substantially at several points during the past ten years. I have summarized the changes algebraically in table 2. As is evident in the table, the period may be divided into four calculation phases:

(1) *Prior to July 1, 1968.* During this period no work incentive payment methods were in effect. In theory, all returns from work over and above mandatory deductions reduced welfare payments by an equal amount once the difference between "need" and maximum aid had been covered. This difference was not substantial at this time. For a female-headed

TABLE 2

CALCULATION OF PAYMENTS UNDER CALIFORNIA AFDC[a]

Time Period	$\hat{E}$ Maximum Gross Earnings for Eligibility	E^* Gross Earnings at Which Tax Rate Becomes Positive	E^{**}
1/1/65-7/1/68	$\hat{E} = \frac{(N + X_w - I)}{(1 - t_w)}$ If $E \le E^*$, $P = M$	$E^* = \frac{(N - M + X_w - I)}{(1 - t_w)}$	$E^{**} = \frac{(N + X_w - I)}{(1 - t_w)}$
7/1/68-2/1/70	$\hat{E} = \frac{(N + X_w - I}{(1 - t_w)}$ If $E \le E^*$, $P = M$	$E^* = \frac{(N - M + .67(X_w + \$30) - I)}{(1 - t_w).67}$ If $E^* < E \le E^{**}$, $P = N - .67E(1 - t_w)$ $+ .67(X_w + \$30) - I$ if $[E(1 - t_w) > \$30]$	$E^{**} = \frac{N - I + .67(X_w + \$30)}{(1 - t_w).67}$ If $E > E^{**}$, $P = 0$
2/1/70-10/1/71	$\hat{E} = \frac{(N + X_w - I)}{(1 - t_w)}$ If $E \le E^*$, $P = M$	$E^* = \frac{(N - M - I + X_w + \$20)}{(1 - t_w - .33)}$ If $E^* < E \le E^{**}$, $P = N - E(1 - t_w - .33)$ $+ (\$20 + X_w) - I$ if $[E(1 - t_w) > \$30]$	$E^{**} = \frac{N - I + X_w + \$20}{(1 - t_w - .33)}$ If $E > E^{**}$, $P = 0$
10/1/71-present	$\hat{E} = \frac{(N + X_w - I)}{(1 - t_w)}$ If $E \le E^*$, $P = M$	$E^* = \frac{X_w + \$20 - I}{(1 - t_w - .33)}$ If $E^* < E \le E^{**}$, $P = M - E(1 - t_w - .33)$ $+ (\$20 + X_w) - I$ if $[E(1 - t_w) > \$30]$	$E^{**} = \frac{N - I + X_w + \$20}{(1 - t_w - .33)}$ If $E > E^{**}$, $P = 0$

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[a] Notation is summarized on next page.

CALCULATION OF PAYMENTS UNDER CALIFORNIA AFDC

Notation:

E $\equiv$ Gross earnings

I $\equiv$ Other income (e.g., alimony, etc.)

X_w $\equiv$ Work expenses

N $\equiv$ Minimum basic standard of adequate care (needs)

M $\equiv$ Maximum aid standard

P $\equiv$ Welfare payment

t_w $\equiv$ Proportion of wages withheld for social security, income taxes

E^* $\equiv$ Gross earnings at which welfare tax rate becomes positive, i.e., for $E > E^*$ payments decline as earnings increase

E^{**} $\equiv$ Gross earnings at which payments fall to zero

$\hat{E}$ $\equiv$ Maximum gross earnings for program eligibility family with two children, "need" was $181 per month in July of 1967 and maximum aid was $172. In practice, caseworkers may have enhanced work incentives through liberal treatment of work expenses.

(2) *July 1, 1968 to February 1, 1970.* For over a year following implementation of the provisions of the Social Security Amendments of 1967, California misinterpreted the work incentive provisions included in the law. The state directed counties to apply the "$30 and 1/3" disregard to earnings *net* of mandatory deductions rather than to gross earnings. The effect of this approach when compared to that described earlier is inconsequential for the welfare "tax on earnings. The technique did lower E^* and E^{**}, however. Unlike the procedure described earlier, the method used during this period replaced 2/3 of each dollar of work expense, not all costs. This may have created some incentives toward economization on these expenses by recipients or perhaps exaggeration of them by caseworkers.

(3) *February 1, 1970 to October 1, 1971.* The procedure initially employed for incorporating the $30 and 1/3 incentive in payments calculation was ruled invalid in litigation, and in February 1970 the state shifted to the procedure described earlier. The effect of the shift was to expand the range of earnings consistent with continued welfare eligibility.

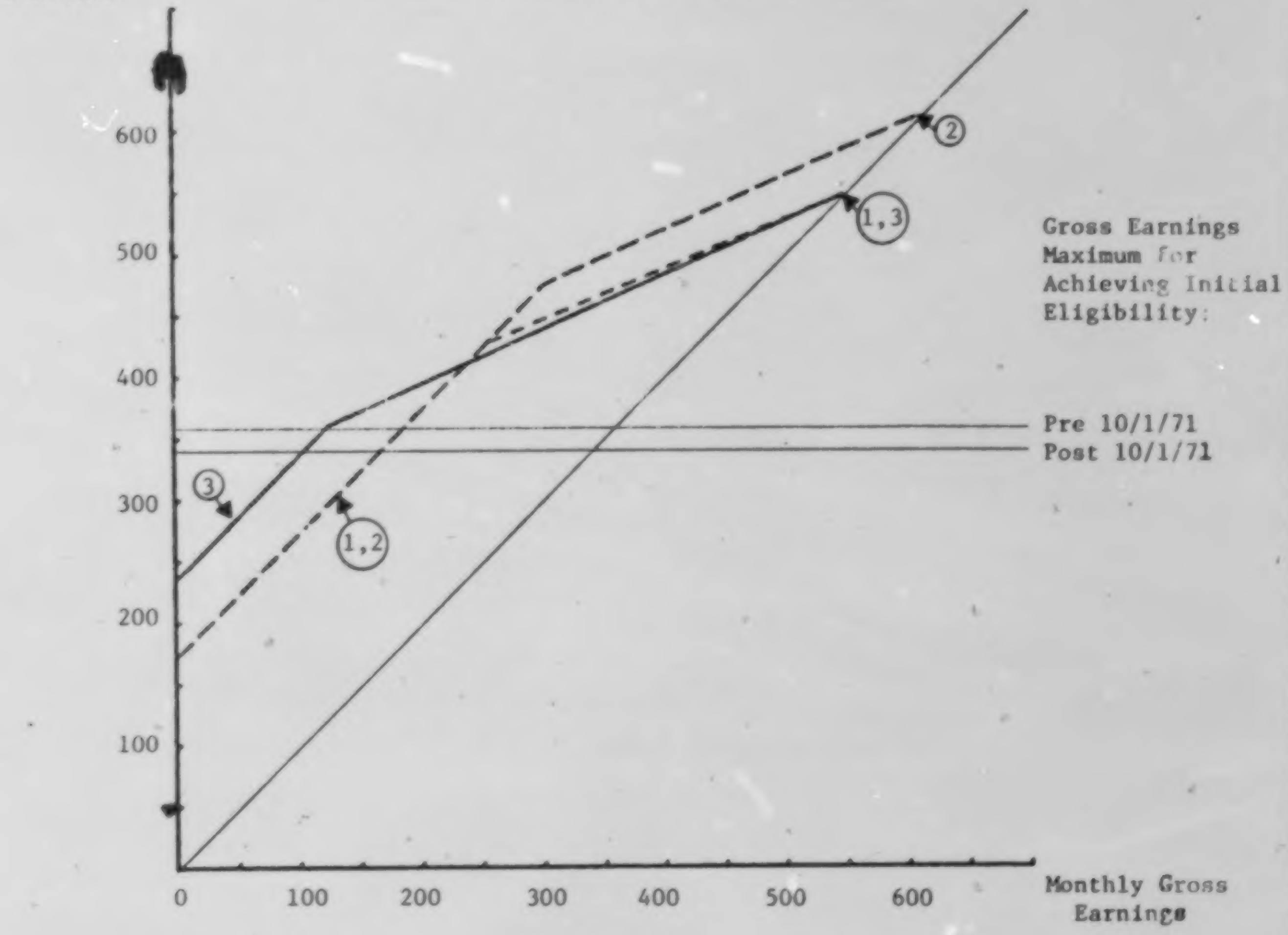
California did not change its maximum aid standard from the early 1960's to June 1, 1971. Because of adjustment for living costs, however, the needs standard rose steadily during this period. For the family of three used in table 1 the change was from $167.25 to $271. This plus the constant payment level increased the attractiveness of working rather than relying only on a benefit check for subsistence. As the formula for E* in table 2 indicates, increase in need *ceteris paribus* has a multiple effect on the range of earnings for which no benefit reduction is experienced. This meant that E* and E** went up at a faster rate than did the cost of living.

(4) *October 1, 1971 to the present.* In October of 1971 the California legislature altered the treatment of earnings under AFDC in a substantial way with two relatively simple amendments to existing state law. The first raised the maximum aid payment to the point at which maximum aid plus the bonus value of food stamps approximated what had been the need standard in the past. The combination was henceforth called the "Maximum Basic Standard of Adequate Care" and became the needs standard for eligibility. A standard MBSAC was published for the entire state. While in some counties the new state standard was higher than the one that had been previously used, in Alameda County it brought a minor reduction in need estimates. Second, the legislature altered the calculation of payments so that the recipient not eligible for the basic grant received the difference between maximum aid and countable income rather than the difference between need and countable income as had been the case before. The combined effect of these changes was to raise substantially the maximum aid amounts paid under AFDC but to reduce the amount of payments made to working recipients.

To illustrate the effect on work incentives of changes in the grant computation procedure brought about by the CWRA, I have plotted in figure 1 gross receipts against gross earnings under the three computation schemes that have been used since July 1, 1968. Again I have

FIGURE 1

THE RELATION BETWEEN GROSS INCOME AND EARNINGS UNDER ALTERNATIVE GRANT COMPUTATION SCHEMES



Line 1 is total receipts using calculation technique in use 7/1/68-2/1/70.

Line 2 is total receipts using calculation technique in use 2/1/70-10/1/71.

Line 3 is post-CWRA calculation.

NOTE: This illustration is drawn on the basis of the data and procedures given in the text. Lines 1 and 2 are drawn using the need and maximum aid amounts appropriate 3/1/70; line 3 employs need and maximum aid standards established by the California Welfare Reform Act.

used the example female-headed family described in table 1. No outside income is assumed, work expenses are a flat $50, and mandatory deductions are a constant 1/9 of gross earnings.

Lines (1) and (2) represent gross receipts from work and welfare when benefits are calculated using, respectively, the method employed immediately prior and immediately following February 1, 1970. As indicated, the shift to calculation of the disregard on the basis of gross earnings raised both E* and E** , but over a wide range of earnings benefits under the two system were the same.

Line (3) combines earnings with benefits calculated using the technique introduced by the CWRA and the new need and maximum aid standards. The effect is already described: benefits increase substantially for those without earnings or who earn little, the breakeven point is substantially reduced, and the earnings level at which the effective tax rate on earnings of recipients rises above zero drops from $304.20 to $126.

The CWRA reduced the number of families potentially eligible for assistance in Alameda County by lowering the "breakeven" point--the maximum amount of earnings or other income which families on welfare could achieve and receive welfare benefits. The actual effect on the caseload of these changes was largely dependent on the indirect effect of any change in the rate of case termination brought about by the Act. The CWRA influenced the termination rate in two ways. First, by raising the welfare payments level the act, through an "income effect," may have lowered the termination rate by making staying on welfare more worth the hassle. The increase in benefits was permanent; the legislature added a cost-of-lving adjustment procedure to the state statutes which has brought about a steady upward climb in benefits paid with the price level since 1971. Second, lowering the earnings "breakeven" point for eligibility may have increased the termination rate by raising the likelihood that earnings or other income change could bring about loss of eligibility. A prior there is no way to guess which effect will predominate.

The CWRA eliminated family need as a factor in determination of the welfare payments "breakeven" point. The consequence of this was that no longer could caseworkers or eligibility technicians affect the average welfare "tax rate" by identification of special needs of welfare recipients. Special needs now affected only eligibility determination, and as I have discussed elsewhere, the use of special needs in eligibility determination was substantially constrained by both regulation change and financial incentives.

F. Summary

The object of this paper is to describe changes in the characteristics of families on welfare in Alameda County in the last decade. In this section I have emphasized three things:

(1) The basic "needs" standard for eligiblity and procedures for resource assessment have not changed. Since assets restrictions are defined in nominal terms and have undergone little change, inflation reduces the real value of assets which recipients are permitted to have. Inflation in the last half of the decade has probably increased the significance of the assets restrictions in reducing the number of families eligible for assistance. I conclude that changes in the caseload brought about by new

accessions over the last decade are not the result of extension of welfare through regulation change to families more affluent on intake.

(2) The unemployment criterion used for the AFDC-U program became progressively more restrictive over the period.

(3) Between 1968 and 1971 the amount of earnings and other income which families could have and continue to receive payments steadily increased. It is possible that changes in caseload composition reflect, in addition to characteristics of new families, the increasing retention of families which earlier would have, because of their income, left the rolls. In October 1971 the amount of earnings and other income which families could have and continue to receive payments was reduced. This, too, may have affected the caseload.

(4) Caseworkers possessed considerable discretion throughout this period in evaluation of work expenses and, especially before October 1971, in identification of "special needs" beyond those requirements specifically included in the standard of adequate income used for eligiblity determination. Modest changes in allowed work expenses and frequency of need citation could have significant consequences for work incentives and eligibility determination. As a result many of the consequences of the regulation changes worked out analytically above could have been altered in practice by changes in need assessment or work expense calculation procedures. Whether or not this was the case is an empirical issue.

II. The Caseload, the Sample, and the Number of Families Receiving Assistance

To investigate the effects of the changes outlined above and to find out more about families on welfare, Frank Levy and I have conducted a pseudo-longitudinal sample of welfare recipients in a major urban California population center, Alameda County. Before describing the sample, it is worthwhile to say a few things about the county, its welfare department, and its caseload.

A. The Sampled Population: The AFDC Program in Alameda County

In 1970, Alameda County had slightly more than one million inhabitants, a third of whom lived in Oakland, its largest city. Eighty percent of Alameda County's population in that year was white, but since most blacks lived in Oakland, whites constituted about 50 percent of that city's population. Since the "white" figures in the census include many (but not all) Chicanos, a good guess is that about half the city's population in 1970 considered themselves to be members of minority groups. About 61 percent of Alameda County's AFDC recipients lived in Oakland in that year.

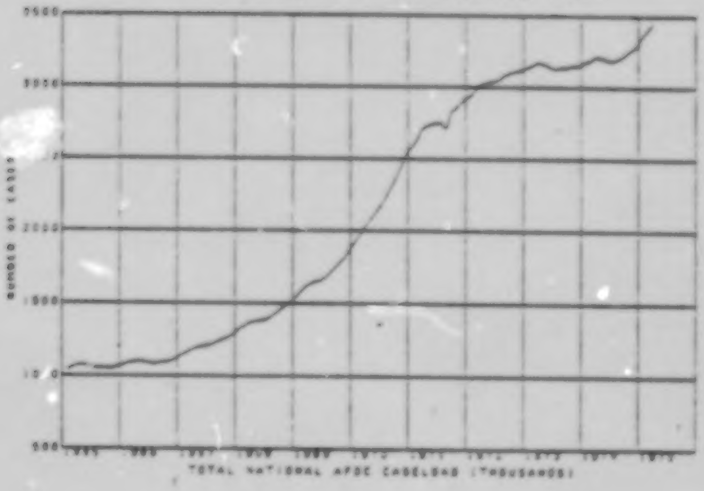
Oakland has most of the ills that beset the nation's older urban areas: a steadily declining central business district, a substantial rate of exodus of white residents, and a growing population of poor nonwhites. Serious as they are, however, the city's problems are not of the same order of magnitude as are those of older cities on the east coast. The county includes important and relatively affluent suburbs such as Hayward, Fremont, and Berkeley and, consequently, does not operate under the same fiscal constraints as its major city. The AFDC program is operated through the county government under the direction of management appointed by the County Board of Supervisors.

Los Angeles County accounted for the major portion of California's AFDC caseload throughout the period covered in this study. In sheer numbers, the Los Angeles program dwarfs that of Alameda, even though, as of March 1970, the latter had the second largest caseload in the state. Despite the relatively lesser numerical importance of its caseload, the evidence suggests that Alameda County's experiences have been similar to those of other California urban areas. In general, both Alameda and Los Angeles county caseloads have moved together and in a manner similar to those in the four other major urban California counties.

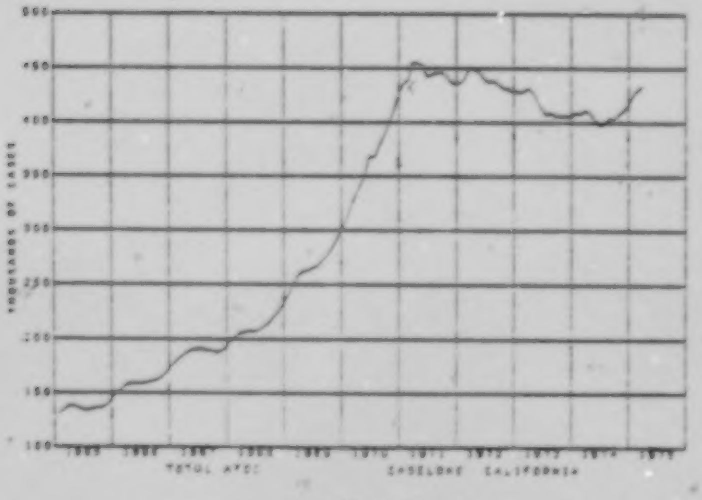
As figure 2 shows, the California caseload grew more rapidly than did AFDC in the nation as a whole at first and then led the nation in the slowdown that followed in 1971-1972. As discussed elsewhere, at least three reasons have been advanced for the difference between California's experience and that of the rest of the nation.[8] First, Barbara Boland's work suggests that California reached the point of "pool exhaustion"--the point at which all eligibles had come onto the rolls--ahead of most other states and this led to the early slowing of caseload growth. Second, California's caseload has a higher proportion of unemployed-parent cases than does the nation as a whole and, as a result, its caseload responded more rapidly to the employment recovery following the 1970-1971 recession than did the welfare rolls in the rest of the country. The recovery

FIGURE 2

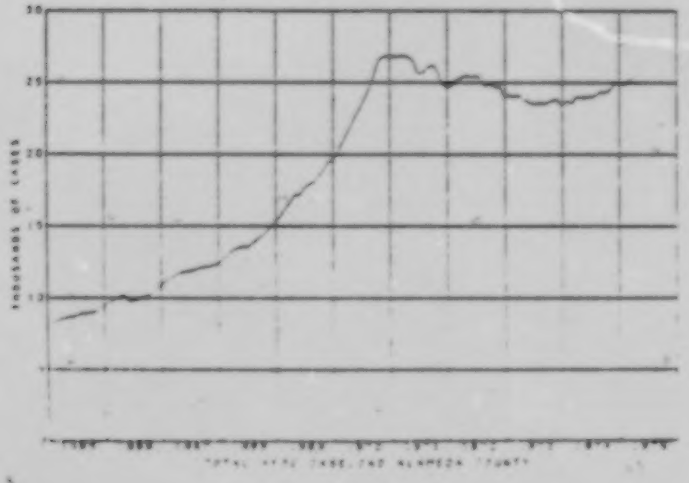
COMPARATIVE CASELOADS, AFDC



NATIONAL



CALIFORNIA



ALAMEDA

itself seems to have occurred earlier in California. Finally, California introduced a series of administrative changes in AFDC operation through the California Welfare Reform Act of 1971, and these are credited with at least some of the reduction in the caseload after that year. As is also indicated by figure 2, the caseload growth turnaround occurred earlier in Alameda County than in the rest of the state and well before the advent of the CWRA.

The graph for Alameda County in figure 2 combines the U and FG caseloads and reveals little about the fluctuation in accession and termination flows that produced these changes. To provide a better view of these factors by program type, I have plotted the caseload figures for the FG and U programs separately in figures 3 and 4.

Considering first figure 3, the dominant impression from the FG case statistics is something akin to exponential growth over the first five years of the period, followed by a slight reduction in the size of the caseload in 1971-1972, and not much change at all for the remainder of the period. I have marked the points at which the three key changes in payment procedures occurred. My impression from the chart is that the slope of the caseload line may have increased slightly in July of 1968 and February of 1970, and it is obvious that the CWRA was associated with a reduction in late 1971. However, the most dramatic change, the reversal of caseload growth rates that began in late 1970, is not associated with changes in payment procedures,benefits, or other policy shifts. Recall that all of the growth that occurred between 1966 and 1971 took place without a change in basic benefits paid or the

FIGURE 3

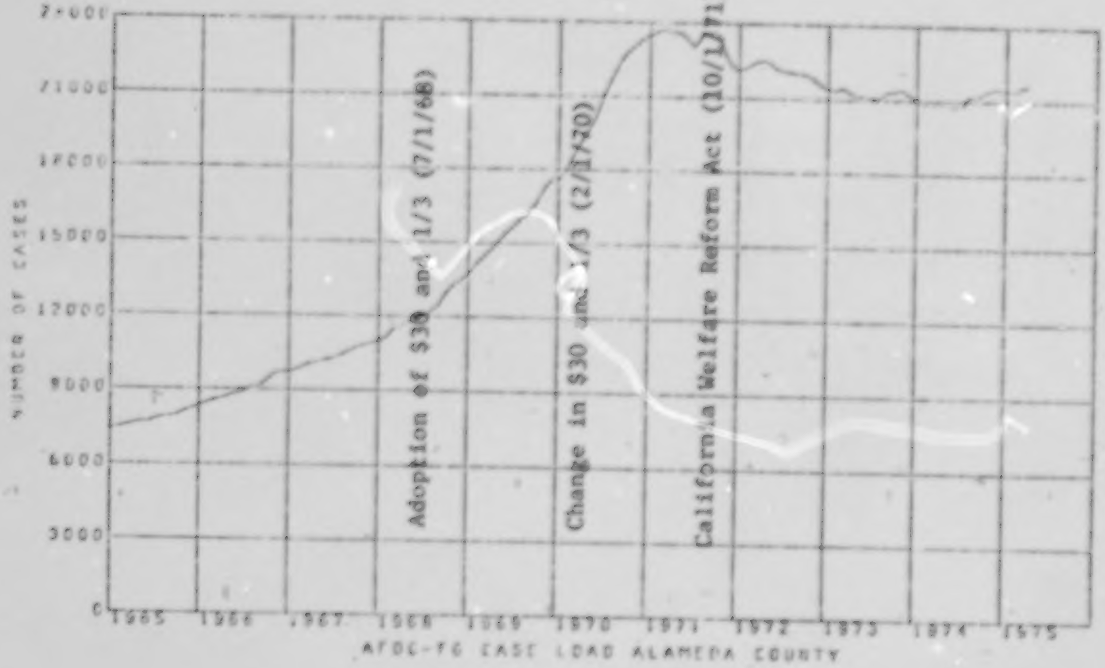
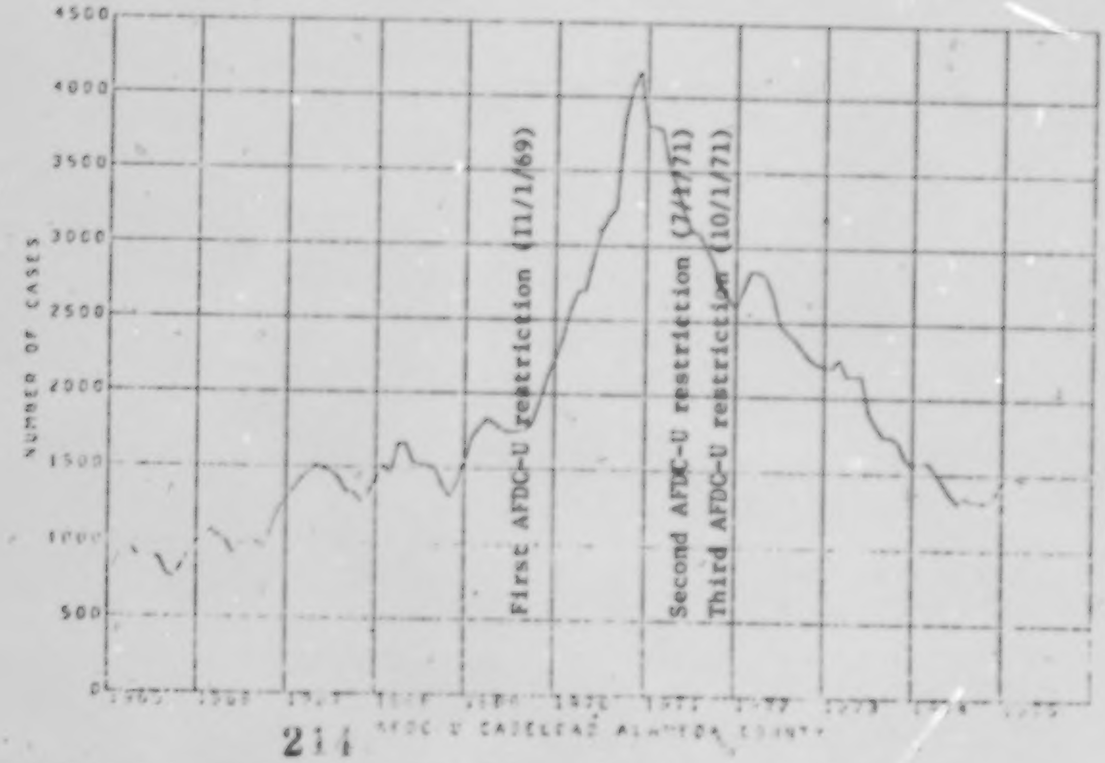


FIGURE 4

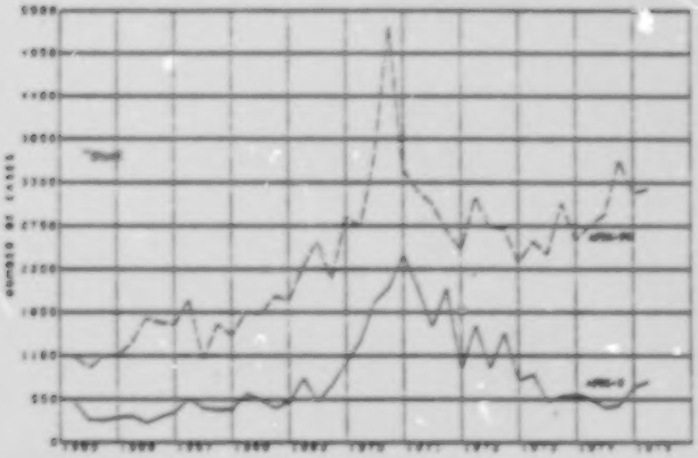


eligibility standard; the real value of the maximum payment available to dependent families through the system was declining steadily throughout this period.

From figure 4 it is obvious that the U caseload is more volatile than that for the FG program, although the overall pattern of growth to 1970, followed by a decline, is similar. 1970 was a year of remarkable expansion--the caseload doubled within twelve months. After 1970, both programs stopped growing, but the turnaround on U led that for FG. As one might expect, there is a substantial seasonal pattern in the U caseload. March is not a good month for job finding in Alameda County, and the consequence for the U caseload is apparent in the figure. Fall, the height of the canning season, offers many more jobs. If a change in the caseload has occurred as a result of variation in the hours-worked rule for defining eligibility under the U program, it has apparently been swamped by other factors. These changes and the inflation-induced tightening of assets standards for eligibility already described may account for the steady downward trend in the program's size. This reduction after 1971 is associated with a decline in seasonal variation.

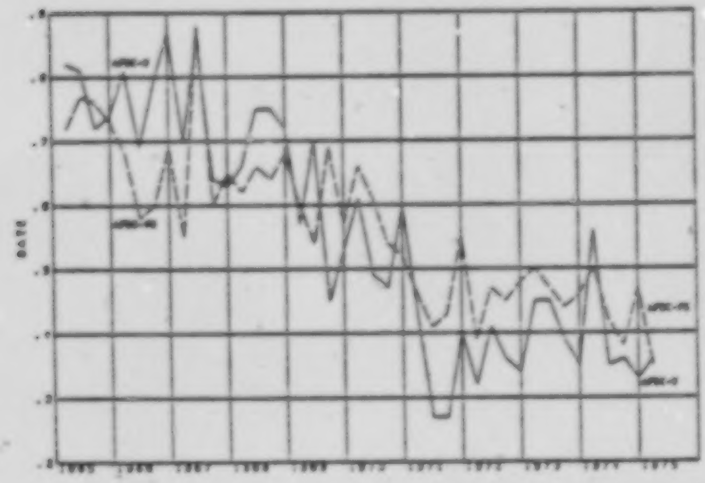
The basic influence on the caseload throughout this period has been the flow of applications. In figure 5, quarterly figures for applications are plotted for both programs. The turnaround in growth of the caseload was preceded by a substantial reduction in the flow of applications for both programs. Data developed elsewhere suggest that this was

FIGURE 5



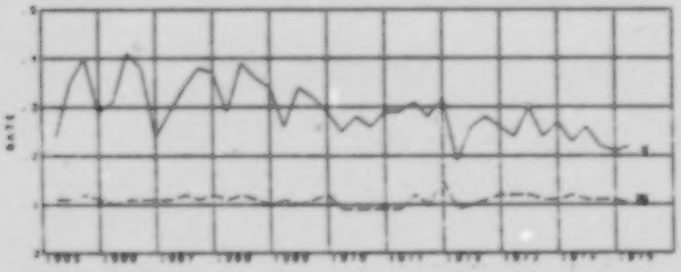
QUARTERLY APPLICATIONS, AFDC-FG AND U, ALAMEDA COUNTY

FIGURE 6



QUARTERLY ACCEPTANCE RATE, AFDC-FG AND U, ALAMEDA COUNTY

FIGURE 7



QUARTERLY TERMINATION RATE, ALAMEDA COUNTY for the FG program largely the result of exhaustion of the pool of eligibles. For the U program the turnaround seems more closely associated with labor market changes.

In March 1970, the census counted only 21,639 female-headed families in the county. The FG caseload by the end of that year had reached almost 24,000. Part of the difference can be explained by the fact that a small proportion of AFDC-FG families include disabled men, and some involve only children living with relatives. Also, many potential AFDC-FG cases--mother-children family units--live with other relatives or in other circumstances that cause them to be missed by census criteria. Cynthia Rence and I have conducted a search of the census for all potentially AFDC family units regardless of living arrangements. We located over 39,000 such families, including two-parent families with one parent disabled.[9] However, we estimate that only 20,500 of these units satisfied the AFDC financial eligibility tests. The larger number reached by the caseload in the year following the census probably reflects the presence on the rolls of families which, because of the earnings disregard procedure, remained on assistance even after incomes were achieved which would have caused them to be screened out by our procedure.

These results confirm that short of a tremendous upsurge in illegitimacy or divorce rates, it would have been impossible to sustain, in 1971, the rate of growth experienced in 1970. The unemployment rate for the SMSA as a whole did not begin to fall until mid-1972. The fact that the U caseload growth reversed earlier--in December 1971--is at least partly attributable to the conclusion of a major strike against

General Motors that began in September and ended in December. Many strikers were eligible for benefits under AFDC-U and promptly applied. Temporary layoffs among secondary G.M. suppliers also contributed to the U caseload.

There are a number of local factors influencing the flood of applications that occurred for both programs in 1970. Some portion of the expansion was the result of recruitment by recipient-oriented groups such as the Alameda County Legal Aid Society; part was apparently brought about by active solicitation of applications by caseworkers. This, plus a series of revelations concerning welfare "fraud" brought the welfare system to the attention of the *Oakland Tribune*, an important political force in the county. The *Tribune* began a series of articles and news reports in May 1970, in which lax administration in the welfare department, the efforts of the Legal Aid Society, and "legal fraud" were emphasized.[10] The initial impact of the articles was to raise both public indignation and the number of applications for welfare. The "public outcry" escalated and was encouraged by the governor. It eventually culminated in the passage of the California Welfare Reform Act in the fall of the following year despite the feeble protestations of a state legislature controlled by Democrats. The intensity of the publicity probably had some negative effect on the willingness of otherwise eligible families to apply for assistance. However, apparently the publicity also served to attract new applicants. Public indignation was further stimulated by the discovery that benefits were available to strikers in the G.M. labor dispute.

Many of the horror stories of "legal fraud" on welfare published by the *Tribune* were the natural result of the payment formula then in effect.

They could have been readily predicted in advance by anyone who had seen table 2! Alameda County, like other counties in the state, found that the $30 and one-third deduction and the leverage effect of work expenses on the welfare breakeven point made it possible for families with large gross incomes to receive benefits. The *Tribune* managed to find one family enjoying benefits *and* $1,400 per month in earnings. Likewise, the monthly accounting scheme created a number of bizarre cases, including that of the destitute school teacher already mentioned.

In response to pressure from the *Tribune* and the governor's crusade, the county clearly "tightened up" the process of application acceptance. Resources of applicants were checked much more carefully. As a result of change in Federal law, the process of eligibility determination was taken out of the hands of caseworkers--who tended to view themselves more as advocates of the applicants than as defenders of the county's solvency--and into the hands of eligibility technicians who would be likely to apply the rules more rigorously.

Some information on the administrative effect of these factors is provided by a comparison of acceptance rates on welfare before and after this period. In Figure 6, quarterly acceptance rates for AFDC applications are plotted over time. For both the U and FG programs, the proportion of applications accepted declined from an average of approximately 65 percent before 1970 to 45 percent after. This does not appear to have been a temporary shift, nor is there a formal regulation change that can account for it. The evidence is that it is the result of management changes and possibly the fact that, as the pool of eligibles approached exhaustion, people applying were less likely to meet the program requirements.

Looking back at the flow of applications as charged in figure 5, it is easy to understand why the rigor of application of eligibility criteria may have declined during 1970. The quarterly flow of applications doubled between 1969 and 1970. It was virtually impossible to keep up with this flow and to maintain training standards for caseworkers and eligibility technicians. The regulations are far more complicated than the description presented above suggests, and they are not learned in a day. I have generally been unable to teach them to undergraduates in a quarter; however, this information is consistent with several alternative hypotheses.

Finally, in figure 7 I have plotted quarterly termination rates for both programs. Again, seasonal factors are pronounced in the volatile U program. Both this seasonal variation and average termination rates have declines gradually over time. Despite this decline, the U termination rate is much larger than that for FG. Note that, for both programs, the termination rate jumped during the quarter in which the CWRA was enacted but plummeted during the first quarter of 1972. The initial effect of the CWRA may have been to accelerate the termination of cases that would have closed anyway.

This quick tour of the caseload history has raised a great many questions and answered only a few. Apparently a number of exogenous factors were acting on the caseload during the first six years of the ten-year period under discussion. It is not clear what the consequences for caseload composition of these charges were. Despite intensified concern about program management in Alameda and other California counties during this period, only the vaguest information exists about what the new people seeking welfare were like, or, for that matter, how the old caseload was composed before the flood of new applications during 1969-1970.

Thus, a first step in formulating hypotheses about factors influencing change among welfare families would seem to be the collection of data about who they are. This is the next topic.

B. The Sample

To find out more about caseload composition and change over this period, a file of 3,159 Alameda County case histories for the period 1967-1973 was created by sampling the county caseload for each year 1967-1972, reading the case files on selected recipients, and translating the collected information into a form suitable for analysis. Cases selected were chosen at random from those cases receiving benefits at various points during this time period. Once selected, information on case characteristics as of the selection date--the "sample month"--was recorded. Then, data on case status in each of four quarters subsequent to the sample data were accumulated, along with some information on case experience through the first quarter of 1974. Thus if a case was selected from the rolls of May 1967, the "observation" in the data set includes information on status of people in the family at the beginning of that month and for the following eleven months that followed--the "sample year." This is a "pseudo" longitudinal file, because no case is covered for the entire period.

The sampling procedure adopted is a compromise, given the differing requirements of the various objectives of the project. A sample to be used for making inferences about the composition of the caseload at a point in time would ideally be made up of sufficient observations at that point to permit acceptably reliable inferences about the caseload as a whole. But I also wanted to sample families in many different months to observe behavior under varying economic conditions. This conflict diminishes in significance as the sample becomes very large, but the expense of data collection made the amassing of a sample of the magnitude required to do both jobs well out of the question.

The procedure followed was to read a large enough sample from the 1967, 1968, 1970, and 1972 caseloads to permit making some inferences about the caseload as a whole, but to spread the sample over the twelve months of the year rather than to concentrate on any particular month. The spread utilized reflects seasonal variations in the number of families on welfare. The result of this procedure is a sample which represents average caseload composition during the year and, as a by-product, permits estimates of the total number of families on welfare at any time during the year. This will be illustrated later. To enhance the breadth of the sample, observations were also collected from the 1969 and 1971 caseloads, but not in a number large enough to permit inferences about the caseload as a whole during those years. The AFDC-U caseload in each year was oversampled to provide inferences about U cases with the same reliability as those from the FG sample.

Target sample sizes were selected for each year on the basis of official caseload figures. My objective was to obtain a sample large enough to provide estimates of proportions (e.g., proportion of cases with over three children) for which in no instance would a 95 percent confidence exceed ± .05. Once the sample size was determined on the basis of this criterion, that number of cases was drawn at random from welfare department payment data to provide the necessary file numbers for case location. A number of minor problems were encountered. Some cases on the rolls were not of interest from a behavioral standpoint, because, for structural reasons, the case status was not likely to be affected by external factors of interest in this context. Examples of this type were cases made up of children being cared for by nonneedy relatives on behalf of the county, children in institutions, and the like. Some cases appearing on the payment rolls were not, in fact, open in the month for which they were to be sampled. Finally, some case files--primarily those for cases sampled for the early years--had been lost. The number of missing cases was small in all samples. In the 1968 FG sample, for example, we were unable to locate 22 out of an initial selection of 312 cases, and this was the highest incidence of missing cases in the overall sample. Missing cases were replaced.

In table 3, the final sample size is recorded for each year and program. These cases can be treated as a random sample of families receiving AFDC in Alameda County in which one or both parents were either present in the household or expected to return--about 96 percent of all cases.[11] Since the proportion of cases satisfying our sampling criteria in the Alameda County caseload itself must be estimated from our data, only approximate confidence intervals can be calculated for estimates of proportions to be cited below, but the approximation is very good.

Space does not permit a detailed discussion of what welfare files in Alameda County are like. A great deal more information was contained in

TABLE 3

ALAMEDA COUNTY WELFARE SAMPLE

Year	Program	Average County Caseload	Number of Cases Sampled
1967	FG	10,313	307
	U	1,394	255
1968	FG	12,106	327
	U	1,492	270
1969	FG	15,549	190
	U	1,794	197
1970	FG	20,630	347
	U	3,092	305
1971	FG	23,355	195
	U	3,250	113
1972	FG	22,123	342
	U	2,546	310
Total 1967-72	FG U	17,346 2,261	1,708 1,450

Source: Michael Wiseman, "The Alameda County Welfare Sample: Graphs, Tables, and Stories," Department of Economics Working Paper No. 80, University of California at Berkeley, July 1976, pp. 4-5. (Henceforth cited as "Graphs.")

them about case histories and families on welfare than might have been anticipated. The Alameda County Welfare Department throws away little; each file was a complex collection of caseworkers comments, information on services received, payment data, police records, gossip, and marginal notes by caseworkers. It was possible to train readers to develop from these fragments a relatively complete case history. We collected data on factors missed by the mechanistic approach of other welfare surveys. Needless to say, elaborate precautions were taken to assure that the confidentiality of this information was respected and that no way of connecting the collected information with the recipient family was possible.

Following collection, the data were "laundered" by an extensive system of checks on internal data consistency, record composition, and transcription accuracy. Detailed information on file composition and information collected is available from the author.[12]

C. Families Receiving Welfare

The Alameda County Welfare Sample was designed in part to allow estimation of the number of families actually receiving AFDC payments during a calendar year. To qualify for aid, AFDC families must be in serious need. If the number of families receiving aid during the year is substantially greater than the caseload at any point in time, this is evidence that a substantial number of families in Alameda County live on the margin of welfare. For them public assistance provides an important buffer against common events. Because of the presence of this group, small changes in eligibility conditions might have important effects on caseload size. If the number of families receiving aid during the year is only marginally greater than the largest monthly caseload (it obviously has to be somewhat larger), then the number of near-poor is perhaps less significant, and modest increases in the generosity of eligibility standards are less likely to affect the caseload in any substantial way.

Bradley Schiller has argued that the number of families receiving welfare nationwide in any particular year is as much as 50 percent larger than the average monthly AFDC caseload.[13] His estimate is based on analysis of official figures on 1968 caseload levels, monthly accessions to welfare, and an estimate of the number of families which experience more than one spell of welfare during each calendar year.

Schiller's estimation procedure begins with the number of AFDC cases nationwide at the end of 1967. To this he added all cases coming onto the rolls during the following year and subtracted an estimate of the number of cases which came onto welfare in 1968 after having been on earlier in the year. His estimate of the number of cases which experience more than one period of dependence during the year is derived from an HEW survey of recipients.

Schiller's procedure probably produces an inflated estimate of the number of families actually receiving benefits. As both Rydell, et al.,[14] and my own experience in Alameda County indicate, many of the case actions that get counted as accessions to assistance in the official statistics do not begin with circumstances that a recipient family themselves would term being "off welfare." As I will show later, there is a surprising amount of movement from one program to another in AFDC that, while counted in official statistics as simultaneous terminations and additions to the rolls, does not really constitute the addition of a new family to the rolls and which would probably not be counted as involving a period off welfare by the recipients going through the transition. Also, some openings and closings are the result of technical problems related to recipient compliance with regulations and similar matters. These factors may produce "closures" which last for only a week. It is doubtful that recipients would report this administrative "churning" when asked to tell how many times they have been on assistance during the year. In short, the spells that recipients recall and what the welfare department's and HEW's records show may be entirely different things.

Using refined data from county files, it is possible to duplicate Schiller's method while adjusting for part of the problems described above. I use data for 1972, since as figure 2 indicates, 1972 was a year of more-or-less "steady state" conditions in the Alameda County welfare system. The computations are outlined in table 4 below. My estimate starts, as did Schiller's, with the caseload at the beginning of the year.[15] To this I add all cases which opened during the year. I subtract from openings total cases added which were termed "restorations" and "other transfers" by the county welfare department. "Restorations" are families off for a sufficiently short time to make detailed review of eligibility unnecessary. In some cases they have been denied aid to force compliance with departmental regulations. "Other transfers" are families moving from one program (say FG) to the other (U).

TABLE 4

CALCULATION OF TOTAL CASES "ON WELFARE" IN 1972

Cases open at beginning of year	24,732
Cases added during 1972	13,191
Minus restorations and intra-program transfers	3,162
Total	34,761
Monthly Average, cases receiving assistance	26,056
Ratio, total cases open to monthly average	1.33

My ratio is less than Schiller's estimate of 1.50, yet I have not adjusted for the number of families experiencing two or more distinct welfare spells during the year. Such adjustment would reduce the ratio further.

For neither my figure or Schiller's do we have a standard of comparison. As I will show below, welfare families enter and leave the county regularly, just as do nonwelfare families. Suppose it was possible to calculate the ratio of all families who live in Alameda County at some time during the year to the average number of units resident there. How big would the ratio be? I have no idea, but I would hardly be surprised if it was of the same order of magnitude as 1.33.

Direct estimation of the number of families on assistance at some time during the year from the sample permits explicit adjustment for families on assistance more than one time. The method I employ is best explained through an example. Suppose the average annual caseload is made up of 100 households, and the households are evenly divided between two types. Type one households stay on welfare for precisely one-half year, from January to June or from July to December. Type two households are on all year. Under these circumstances any cross-section sample will show the 50-50 division of the caseload between families of each type. However, a count maintained from beginning to the end of the year will reveal that in fact 150 families received welfare, and two-thirds of them were of type two. An estimate of total families on under this circumstance is made from cross-section data by multiplying the share of the average caseload accounted for by the group by the inverse of the proportion of the year members of the group are on welfare and then summing the estimate for all groups. For type one households this is 50 x 1 1/2 = 100; for type two households the corresponding number is 50 x 1/1 = 50. Summing the two provides the final estimate of the total number of families on assistance during the year--150.

Note that the "cross-section data" referred to in the preceding paragraph will be hard to come by, since they must provide a reliable representation of average caseload composition and include data for each case on number of periods of assistance during the calendar year.

In the Alameda County Welfare Sample, data were recorded for the total months on welfare during the calendar year for families in each year's sample. Since, as described earlier, the allocation of the samples by month within each year conformed to the monthly pattern of caseload size, these data can be manipulated in the same way as was done for the example above. I have tabulated elsewhere the distribution of families in each sample by months on welfare in the calendar year of their sample.[16] On the basis of these data, I estimate that the total number of families receiving welfare at one time or another during 1972 exceeds the average monthly caseload at the end of each month by about 22 percent. For 1970 and 1968 I get the slightly higher figures of 30 and 29 percent, respectively. It is not surprising that the ratios are higher in 1968 and 1970 than for 1972; both of the earlier years were periods of rapid caseload expansion. Under such conditions the number of families receiving welfare is certain to exceed average caseload size by a substantial amount.

How much confidence do these figures justify? Each is based on a sample and is sensitive to the estimates of proportions of cases on by month. It turns out that most cases are on all year--70 percent in

1972. The estimate of total cases receiving assistance is most sensitive to this proportion. Allowing the estimated proportion of cases on all year to vary by one standard deviation and distributing the change evenly across all other categories, the estimated "multiplier" factor ranges only from .12 to .30. Thus, these estimates are consistent with those calculated using official caseload statistics (recall the "true" figure should be slightly less than 1.33), and are reasonably well identified. They are theoretically superior. My conclusion is that Schiller's estimates of the numbers of families receiving welfare during the year to the average annual caseload are not applicable to the population I have sampled. I am certain this result is true for Alameda County: I suspect it is true for the nation as well.

III. Demography of the Caseload

The period 1967-73 was marked by growth of the caseload in Alameda County to point of virtual exhaustion of the eligible population. While this "exhaustion" came about primarily because more people came on to the rolls, it is also true that regulation changes, especially those related to the definition of unemployment suitable for qualification for AFDC-U and those related to treatment of earned income by recipients, reduced the size of the population eligible. In this section I describe the consequences for the caseload of these trends. I first summarize changes in family composition and then describe AFDC mothers and fathers.

Only a small fraction of the statistics calculated from the County Welfare sample are reported here. In a companion paper I have printed all of the data on which these generalizations are based.[17]

A. Family Composition

Most of the interesting questions about the composition of families on welfare concern (1) the number of adults present, (2) family size, and (3) the proportion of families with children under kindergarten age. I shall discuss the related policy issues in connection with illustration of the changes in these factors in Alameda County.

1. *Adults present in the household.* In table 5 I have tabulated the proportion of FG cases with males present in the household, the

TABLE 5

ADULTS PRESENT IN THE HOUSEHOLD

(Numbers in parentheses are standard errors of the estimated proportions)

Year	Proportion of FG Cases		Proportion of U Cases without Males
	With Adult Males	Without Adult Females	
1967	.07	.00	.05
	(.01)	--	(.01)
1968	.11	.03	.09
	(.02)	(.01)	(.02)
1970	.12	.03	.04
	(.02)	(.01)	(.01)
1972	.13	.03	.05
	(.02)	(.01)	

SOURCE: Wiseman, "Graphs," p. 12.

proportion of FG cases without female adults in the household, and the proportion of U cases without fathers. The first number is tabulated to emphasize that the stereotype of the AFDC-FG family made up of only a single woman and her children fits most, but not all of the cases in the county caseload. There is some evidence here that the proportion of the AFDC-FG caseload made up of two-parent families is increasing. If the men in these cases are the acknowledged father of the children present, then they must be disabled. Otherwise they are "nonadoptive" stepfathers or men otherwise assuming the role of spouse. As column two indicates, there appears to be no significant change over time in the proportion of AFDC-FG cases headed by single men.

A surprising proportion of AFDC-U families do not include fathers. On occasion this comes about because of clerical error and misclassification. People at the county welfare department tend to treat the U-FG distinction much more casually than do outside researchers, in part for reasons that will be discussed in section VI below. However, the great majority of AFDC-U cases without fathers are the remnants of desertion. From experience the county welfare department has found that fathers leaving their families are likely to return in a relatively short time. For this reason a family deserted is held in the U program for two or three months before a formal re-designation occurs. The fact that at any time about one case in 20 on the U rolls is missing a father even though administrative procedures allow this state to endure for only two or three months suggests an alarming rate of family fragmentation. More evidence is presented on this matter later.

2. *The size of the family budget unit.* As table 6 indicates, the size of the average family units receiving assistance in Alameda county in both the AFDC-FG and the AFDC-U programs declined steadily over the period covered by the sample. It is possible that this decline is the result of conscious decision of mothers on AFDC-FG and parents in AFDC-U families to have fewer children, or to at least spread their period of childbearing over a longer time. An alternative hypothesis is that this decline in FBU size is simply the result of the change in the age composition of the caseload that accompanies its "explosion." Evidence on this issue will be presented after discussing the age and pregnancy status of AFDC mothers.

TABLE 6

NUMBER OF PERSONS IN FBU
(Numbers in parentheses are estimated standard errors)

Year	Program	
	FG	U
1967	3.8 (1.9)	5.5 (2.1)
1968	3.8 (2.0)	5.2 (2.1)
1970	3.6 (1.9)	4.7 (1.9)
1972	3.4 (1.7)	4.5 (1.9)

SOURCE: Wiseman, "Graphs," p. 14.

3. *Number of families with small children.* Mother with pre-kindergarten aged children are generally exempted from work registration and job search requirements. In table 7 I have tabulated the proportion of FBU's which include children less than five years old and the proportion with children of grade school age or less. I include in both classifications mothers who are pregnant, regardless of the ages of any children already born. While there is some evidence in the table that the proportion of families with very young children is declining, no significant changes have occurred. Over half of all mothers in the AFDC-FG program have children too young for kindergarten; almost 90 percent have children young enough to require supervision if the mother or father is expected to be away for extended periods of time.

Table 7

AGES OF CHILDREN, FG PROGRAM
(Numbers in parentheses are estimated standard errors)

	Porportion of Families with Children*	
Year	≤ 4	≤ 12
1967	.57 (.03)	.88 (.02)
1968	.59 (.03)	.89 (.02)
1970	.56 (.03)	.87 (.02)
1972	.53 (.03)	.89 (.02)

Source: Unpublished tabulations, Alameda County Welfare Sample

* Includes unborn children when mother is pregnant.

B. Characteristics of Parents

Growth in the caseload has been associated with movement on to welfare of families younger, better educated, and more likely to be white than was true for the typical case in 1967. Mothers in AFDC families were more likely to be employed in 1970 than in the years before or after. These changes are illustrated in this section.

In most of my tabulation I concentrate on the characteristics of mothers in the cases, regardless of whether the family is receiving assistance under the FG or the U program. Where possible, I will also summarize the data available on fathers in the AFDC caseload for the characteristics I discuss.

1. *Age, education, and race.* Table 8 presents the summary statistics which support the generalizations concerning age, education, and racial changes made above. My "white" tabulation does not include whites with Spanish surname. The actual division of the AFDC-FG program in 1972 was 53 percent black, 5 percent white with Spanish surname, 39 percent other white, and the remainder made up of Oriental, American Indian, gypsy, and other groups. As the proportion of the FG population made up of white families has expanded, that of both the Spanish surname and black families has declined. Basically, the same demographic changes have occurred in the AFDC-U caseload, but throughout the period whites have made up a larger proportion of that group.

There were insufficient families with men present in the AFDC-FG sample to draw reliable inferences concerning the characteristics of men in this group. Over the period 1967-72 the characteristics of fathers in the AFDC-U caseload have changed in the same way as those of AFDC-U mothers: AFDC-U men are more likely now to be white, to have a high school education, and to be younger than was the case in 1967. AFDC-U fathers tend to be older than AFDC-U mothers (58 percent were less than 30 in 1972, compared to 73 percent of the mothers) and are slightly less likely to be white. Racially mixed couples in AFDC-U tend to be made up of a black father and white mother.

TABLE 8

SUMMARY OF CHARACTERISTICS OF MOTHERS, AFDC FAMILIES
(Figures in parentheses are estimated standard errors)

Program	Year	Proportion <30 Years Old	Proportion White	Proportion with 12+ Years Education
FG	1967	.49 (.03)	.29 (.03)	.34 (.03)
	1968	.50 (.03)	.31 (.03)	.39 (.03)
	1970	.52 (.03)	.36 (.03)	.46 (.03)
	1972	.56 (.03)	.39 (.03)	.51 (.03)
U	1967	.57 (.03)	.38 (.03)	.38 (.03)
	1968	.66 (.03)	.33 (.03)	.36 (.03)
	1970	.67 (.03)	.47 (.03)	.49 (.03)
	1972	.73 (.02)	.47 (.03)	.53 (.03)

Source: Wiseman, "Graphs," pp. 18-20.

2. *The incidence of pregnancy.* The decline in the average age of AFDC mothers over the period suggests that part of the reduction in average family size may be only a transitory phenomenon. I have not undertaken a detailed analysis of fertility of the women in the Alameda County sample, and I have no data on desired family size for women in this group. I did collect information on the proportion of women in each group pregnant at the time of the sample. These data are presented in table 9. As the table indicates, there has been no significant change in the likelihood of pregnancy among AFDC mothers in Alameda County. It is possible that as average age begins to climb the average size of these families will start to grow again.[18]

TABLE 9

MOTHER PREGNANT AT TIME OF SAMPLE (PROPORTION)
(Numbers in parentheses are estimated standard errors)

Year	FG	U
1967	.05 (.01)	.15 (.02)
1968	.08 (.01)	.14 (.02)
1970	.07 (.01)	.14 (.02)
1972	.08 (.01)	.14 (.02)

SOURCE: Wiseman, "Graphs," p. 22.

3. *Employment of recipients.* The results of multivariate analysis of the sample indicate that, other things equal, an AFDC family headed by a working adult is much more likely to leave welfare and poverty within the near future than is one headed by an adult who is not working outside the home.[19] In describing AFDC regulations in the first section of this paper, I argued that work incentives incorporated in the regulations for earnings treatment progressively enhanced work incentives for AFDC-FG mothers over the period 1967-1970 and then reduced them somewhat after October 1971. For AFDC-U fathers work incentives have been eroded throughout the period here, both by the constraint imposed on the definiyion of unemployment satisfactory for eligibility and by increases in the payments level associated with welfare.

In table 10 I have tabulated the proportions of adults in the sample with jobs during the "sample month." Three things stand out:

TABLE 10

PROPORTION EMPLOYED OUTSIDE OF HOME AT TIME OF SAMPLE
(Numbers in parentheses are estimated standard errors)

Year	AFDC-FG Mothers	AFDC-U Mothers	AFDC-U Fathers
1967	.13 (.02)	.07 (.01)	.17 (.02)
1968	.18 (.02)	.07 (.01)	.12 (.02)
1970	.22 (.02)	.08 (.01)	.19 (.02)
1972	.16 (.02)	.06 (.01)	.18 (.02)

SOURCE: Wiseman, "Graphs," pp. 21 and 38.

(1) the proportion of AFDC-FG mothers working declined significantly between 1970 and 1972; (2) the proportion of mothers in the AFDC-U program who have jobs did not change over this period, and (3) the proportion of AFDC-U fathers with jobs did not diminish in 1972, despite the change in the guarantee and reduction in the hours rule.

Numbers like these are hazardous and are to be interpreted with caution. Other results of mine show that in fact there was no significant reduction between 1970 and 1972 in the likelihood that mothers in the AFDC-FG program who did not have jobs would take them.[20] Therefore, these statistics must mean that the CWRA altered the likelihood that mothers would be able to simultaneously work and retain welfare. This result was the product of both the lowered "breakeven" point for welfare eligibility and, I shall show below, tighter treatment of work expenses.

The high proportion of fathers in the AFDC-U program who were employed in 1972 is something of a mystery for which I have only an untested hypothesis to offer as explanation. During this period the 100 hours per month work restriction was waived for fathers in on-the-job training programs. It is possible that this route out of welfare is a common one and accounts for the substantial proportion of father on the job in 1972. Results of multivariate analysis do not reveal any increase in the likelihood that fathers without jobs will take them as a result of the CWRA.[21]

IV. Administrative Discretion

In section 2 I pointed out three important procedures in which administrative discretion could affect family eligibility and welfare payments.

greater frequency of need citation in 1967 probably indicates that the county was simply more generous when it did not bear all the costs of such allowences. An alternative explanation is that typical families had more exceptional needs in 1967, 1968, and 1970 than was true for the 1972 caseload, but there is no evidence to support this contention. The procedures were those for assessment of family assets, special needs, and work expenses. Since the sample described in this paper was only of families already on welfare, I have no information on variation over time in intensity of asset evaluation on welfare intake. Likewise, I do not have information on variation in the extent of special need evaluation on intake. However, the sample did produce interesting information on the extent of special need identification among families on welfare and variation over time in granted work expenses.

Special Needs. As described above, county welfare departments in California can identify certain exception family requirements over and above those included in the county's basic standard of adequate care. These special needs raise the maximum level of nonwelfare income allowed the family while still on welfare and in some cases increased welfare payments. In table 11 I have reported the proportions of families on the AFDC-FC and U caserolls in Alameda County which had special need items cited in the case budget.

The table indicates that special needs were cited much more frequently before 1971, when the California Welfare Reform Act shifted responsibility for special nedc payments to the counties, than was true afterwards. Since the constant-dollar standard of need and maximum aid payments for families in Alameda County were not much different in 1972 than was the case in 1967, the

Table 11

PROPORTION OF CASELOAD WITH "SPECIAL NEED"
(Numbers in parentheses are estimated standard errors)

Year	AFDC-FG	AFDC-U
1967	.29 (.03)	.20 (.02)
1968	.24 (.02	.17 (.02)
1970	.26 (.02)	.19 (.02)
1972	.06 (.01)	.02 (.01)

Source: Wiseman, "Graphs," p. 43.

Treatment of work expenses. In section 1 it was pointed out that because of the procedure for payments calculation the amount of work expenses acknowledged by the county in benefit calculation has a "levered" effect on the "breakeven" point--the level of gross earnings at which payments decline to zero. Since work expenses are a matter of considerable caseworker discretion, it is possible that changes in work incentives installed by legislation in the AFDC payments calculation procedure are in part offset at the local level by contractions in allowed work expenses. In this section, I will show that this has been in fact the case in Alameda County. Beyond this point, I will demonstrate that a celebrated legal challenge to the California Welfare Reform Act, *Conover v. Hall*, probably hurt recipients more than it helped them.

Equation 8 below is the result of a regression of allowed work expenses on gross earnings for all working recipients in the sample for whom data on work expenses was available. The equation includes no intercept for the reference period (January 1967–June 1968) and no dummies to allow for separate intercepts for subsequent payment regimes. A standard F-test on an equation in which these terms were included indicated that they did not significantly improve the fit of the regression. Their estimated coefficients were very small.

$$\begin{array}{lll} \text{Work expenses granted in benefit calculation} & = \underset{(9.26)}{.30}\ \text{EARNINGS} & - \underset{(-1.67)}{.07}\ D_1 \times \text{EARNINGS} \\ & - \underset{(-3.08)}{.11}\ D_2 \times \text{EARNINGS} & - \underset{(-4.21)}{.16}\ D_3 \times \text{EARNINGS} \end{array} \qquad (8)$$

where EARNINGS = gross earnings in March 1970 dollars[30]

DATE = date of observation budget

$D_1 = 1$ if $6/68 < \text{DATE} \leq 1/70$

$= 0$ otherwise

$D_2 = 1$ if $1/70 < \text{DATE} \leq 9/71$

$= 0$ otherwise

$D_3 = 1$ if $10/70 \leq \text{DATE}$

$= 0$ otherwise

$n = 203$

$R^2 = .29$

In table 12, I have summarized the coefficients of equation (8) and have reported the estimated standard error of the regression for each period. These were taken from results of separate estimation of the work expense-earnings relation for each of the subperiods. As is evident from the table, some heteroscedasticity is present. In particular, the residual variance for the last period is significantly greater than that for the one preceding.

TABLE 12

THE WORK EXPENSES-EARNINGS RELATIONSHIP OVER TIME

Time Period	Estimated Work Expenses Granted per Dollar of Gross Income	Standard Error of Regression
1/1/67-6/30/68	.30	$53
7/1/68-1/30/70	.23	44
2/1/70-9/30/71	.19	43
10/1/71-12/30/73	.14	63

SOURCE: Calculations by author from Alameda County Welfare sample.

There are at least three important messages in table 12. The first is the familiar one that before Congress added the $30 and 1/3 work disregard to the AFDC payments calculation procedure the county apparently provided some work incentives through liberal treatment of work expenses. The early period was by a substantial margin the most generous with regard to allowance for work. The second is that part of the work incentive created by introduction and liberalization of the work incentive provisions was offset by a downward adjustment in allowances for work expenses. The smaller standard error seems to suggest that some standardization may have also occurred. Third, the restriction of work expenses allowed in October 1971 contributed to the reduction of work incentives brought about by the California Welfare Reform Act. However, this reduction was accompanied by a significant increase in variance of treatment of work expenses across cases.

A good explanation of the post-CWRA results in table 11 comes from the litigation history of the Act. As proposed by the Governor and passed by the legislature, the Act contained a provision standardizing work expenses at a flat $50 for each recipient working full time. As written, this restriction was clearly inconsistent with the Social Security Act. There is some evidence that opponents of the bill allowed such provisions to remain unchallenged and unaltered in expectation that they would, once implemented, be promptly challenged, declared inconsistent with the enabling legislation, and dropped.[22]

This expectation was justified. A challenge to the regulations standardizing work expenses was filled almost immediately upon implementation of the CWRA provisions. An injunction was obtained which forbade use of the standardization procedures. Before the CWRA all working recipients had routinely had $25 of monthly income discounted for work expenses. The result of the *Conover* injunction was that for a year the county allowed no standard work expenses at all. While recipients with exceptional work expenses (some people in our sample reported work expenses in excess of $200 per month) were protected by the action, table 12 indicates that by and large this injunction probably hurt.

To summarize, my results lend further support to those who argue that the AFDC system provide some financial incentives to those capable of working even before such procedures became part of the law. They indicate that the increasing incentives created by changing payments procedures between 1968 and 1971 were in part offset by tightening of work expenses allowances. The data indicate that working recipients were disadvantaged by constraints placed on benefit calculation procedures imposed during the *Conover* litigation. Elsewhere, I have shown that the $50 standard deduction would have on average benefited recipients.[23] The results for "special needs" and work expenses indicate that the welfare system became much more restrictive in 1971. These changes were apparently not substantive enough to reverse the demographic trends cited earlier.

V. Case Background

The Alameda County Welfare Sample reveals a number of interesting facts about the welfare history of families on the rolls. I begin my discussion of these data by commenting on the circumstances under which welfare mothers first came onto welfare, then consider the number of times each case had been open prior to the point of the sample, and finish with data on duration of dependence. In this section I will provide some evidence to support an earlier contention that there is a difference between the number of "openings" the county reports for cases and the number of actual spells of assistance they experience.

A. Mother's Status at Original Case Opening

I have classified mothers in the AFDC system on the basis of their situation at the time the original opening of their case in Alameda County. While more elaborate schemes have been employed, my impression is that the important distinction to be made is between mothers who came on within six months of the birth of their first child and mothers who came on to welfare at some later point in their lives. Women in the first group tend to have little work experience and usually no experience living indpendently. Those in the latter group have, in general, lived part of their adult lives outside of the welfare system and have experienced self support, either on their own or in a marriage. These data are weak because for cases in which families moved into the county, it was sometimes difficult to identify what the mother's status was when she first came on to welfare. For what they are worth--and I believe they are worth something--the relevant proportions are reported in table 13.

Table 13 indicates that there has apparently been some increase since 1967 in the proportion of cases with mothers who came on to welfare within six months of the birth of the first child. This increase is particularly pronounced in the AFDC-U sample. Since it is possible for a father with no work experience to qualify for AFDC-U in California,

TABLE 13

PROPORTION OF CASES IN WHICH MOTHER CAME ONTO WELFARE
WITHIN 6 MONTHS OF BIRTH OF FIRST CHILD
(Numbers in parentheses are estimated standard errors)

Year	FG	U
1967	.23 (.02)	.26 (.02)
1968	.30 (.02)	.33 (.03)
1970	.27 (.02)	.28 (.02)
1972	.29 (.02)	.43 (.03)

SOURCE: Wiseman, "Graphs," p. 24.

these data may indicate that the decline in the AFDC-U caseload between 1970 and 1972 left as a residual a large number of cases with young couples forced on to welfare and perhaps into marriage by a pregnancy.

The increase in the proportion of cases coming on at what is demographically speaking the first opportunity raises the disturbing possibility that the number of cases coming onto the rolls that are the product of intergenerational transfer of dependency is increasing. In other words, these mothers may have been raised themselves in AFDC cases. My data on this critical point are not very good, but they do not support the hypothesis that the proportion of mothers on the caseload now who were themselves in AFDC families as children has gone up. I estimate that about 9 percent of the mothers in the FG program and between 7 and 8 percent of those in the U program were raised in families that received assistance when they were children.[24] As could be expected, this percentage dropped to 3 in 1970 in the U program as the caseload temporarily expanded to include families of men on strike and others who had been independent for some time prior to their brief welfare experience.

These numbers do not rule out the possibility that Alameda County's welfare system will in the future come to be increasingly devoted to the needs of the children of its past clients. It is simply too soon to tell.

B. Number of Spells on Public Assistance and Other Case Actions

Generally speaking, there has been no important change over the period covered by the sample in the proportion of the caseload made up of families who have been on assistance only one time rather than many. In table 14 I have provided the usual breakdown of families in the 1972 caseload by number of spells on assistance. A "spell" is a period of welfare receipt separated from others by at least a month of independence. The

TABLE 14

NUMBER OF SPELLS ON WELFARE PRIOR TO SAMPLE MONTH, 1972 SAMPLES
(Numbers in parentheses are estimated standard errors)

Program	Number of Spells and Proportion of Sample			
	1	2	3	4+
AFDC-FG	.65 (.03	.20 (.02)	.08 (.01)	.07 (.01)
AFDC-U	.61 (.03	.21 (.02)	.07 (.01)	.11 (.01)

SOURCE: Wiseman, "Graphs," p. 30.

implication is that slightly less than two-thirds of the mothers in both programs have only been on welfare one time; slightly more than 15 percent have been on *four* or more times. Note again that my concentration is on the mothers in the cases. In consequence, only the last of the succession of spells tabulated need necessarily be in the indicated program. A mother can, for example, start out in an FG case, marry, and transfer to U.

In table 15 I have tabulated 1972 cases by the number of *case actions.* A case action is an opening or a closing within either the U or FG program. Since all cases in the sample are on welfare, the number of past case actions must be *odd.* Two things should be noted here.

TABLE 15

NUMBER OF CASE ACTIONS PRIOR TO 1972 SAMPLE YEAR (PROPORTION)
(Numbers in parentheses are estimated standard errors)

Program	Number of Case Actions			
	1	3	5	7+
AFDC-FG	.58 (.03)	.22 (.02)	.09 (.02)	.10 (.02)
AFDC-U	.44 (.03)	.25 (.02)	.10 (.02)	.21 (.02)

SOURCE: Wiseman, "Graphs," p. 29.

First, the proportion of cases with only one *case action* is significantly less in both programs than is the proportion with only one *spell of dependence.* This comes about because of the administrative factors cited in connection with derivation of my estimate of the number of cases ever on welfare and, particularly for the FG caseload, because some women who begin welfare in a family on AFDC-U subsequently transfer to FG following desertion by their husbands. It is this type of movement that rendered the Schiller turnover estimates invalid. Second, in 1972 about a *fifth* of mothers in the AFDC-U program had experienced seven or more changes in status of the type associated with case actions. If each opening-closing combination constituted a distinct spell of assistance, this group would be identical to the 4+ spell classification in table 14. The difference between the 21 percent in the last category in table 15 and the 11 percent in the corresponding category in table 14 can be attributed to either interprogram movement or to administrative factors associated with temporary noncompliance or similar matters. Below I will show that interprogram movement is probably the more important explanation.

C. Duration of Public Assistance

I have interpreted the rapid expansion of the caseload that occurred through 1970 as the consequence of expansion of the caseload into an eligible population that had heretofore not, for some reason, taken up assistance. This should have initially produced a decline in the average duration of public assistance receipt for families in the caseload. As the new families began to "settle in," the duration figure should rise unless the new families exhibit much higher turnover than was the case for typical families on assistance before the expansion.

TABLE 16

DURATION OF DEPENDENCE

(Numbers in parentheses are estimated standard errors)

Program	Year	Current Spell: Average Duration (months)	Current Spell: Proportion >5 Years	All Spells: Average Duration (months)	All Spells: Proportion >5 Years
FG	1967	32.5 (37.2)	.15 (.02)	45.9 (47.3)	.28 (.03)
	1968	30.8 (40.6)	.14 (.02)	48.4 (52.2)	.26 (.02)
	1970	29.8 (39.2)	.12 (.02)	42.1 (47.1)	.21 (.02)
	1972	39.4 (40.6)	.19 (.02)	50.8 (45.2)	.30 (.02)
U	1967	9.5 (10.2)	0 -	21.4 (25.4	.09 (.02)
	1968	9.5 (10.2)	0 -	23.1 (26.4)	.08 (.01)
	1970	8.0 (11.3)	0 -	17.7 (24.4)	.06 (.01)
	1972	15.5 (14.8)	.01 -	28.1 (26.3)	.12 (.02)

SOURCE: Wiseman, "Graphs," pp. 27-28.

Table 16 indicates that average duration of both current spell and welfare history for mothers on welfare fell substantially in 1970 and has, since that time, risen. Clearly, duration of current spell of welfare dependence is much shorter in the U caseload than is the case for FG. Only in 1972 did the average duration of current spell of dependence rise to more than one year. However, there is a much more substantial difference between total time on welfare and total time on welfare in the current spell for U cases than is true for those on FG. A mother in a typical U case during most of the period covered here would have been on welfare more than twice as long all time considered than the duration of the current spell would indicate. Again, recall that the current spell covers all time on welfare up to the sample data which was not interrupted by at least one month of independence, regardless of program.

VI. Case Movement

As the last step in my survey of changes in the Alameda County caseload, I consider movements of families from dependence and between programs. I discuss crude termination and recidivism figures first and then turn to data on interprogram transfers. The data indicate that turnover is substantial. I find what to me is an extraordinary amount of movement by mothers between U and FG status.

A. Termination and Recidivism

In table 17 I have tabulated crude termination and recidivism rates for households in each of the four samples discussed in this paper.

TABLE 17

TERMINATION AND RECIDIVISM RATE OVER ONE YEAR HORIZON
(Numbers in parentheses are estimated standard errors)

Program	Year	Proportion of Cases Closed after 1 year	Proportion of Closed Cases which Reopen
FG	1967	.24 (.02)	.28 (.05)
	1968	.19 (.02)	.24 (.05)
	1970	.17 (.02)	.14 (.04)
	1972	.27 (.02)	.09 (.03)
U	1967	.38 (.03)	.43 (.04)
	1968	.30 (.03)	.31 (.05)
	1970	.44 (.02)	.19 (.03)
	1972	.46 (.03)	.28 (.03)

SOURCE: Wiseman, "Graphs," p. 51.

The table is constructed to conform to the following conceptual experiment: Suppose the reader were to randomly select cases from the caseload during each of the four years indicated. What would be the proportion of those cases off welfare at a point twelve months later? What proportion of those cases actually off would return at any time during another twelve months? The first column provides my estimate of the first probability; the second column is my estimate of the recidivism rate.

A couple of things stand out in table 17 First, closure probabilities for 1972 were at all time (for the period of the sample) highs. FG closure rates significantly increased between 1970 and 1972. U closure rates stayed the same between years but this in itself is remarkable given that closure rates in 1970 must be exaggerated by the presence of a number of GM strikers in the sample. Second, for the FG program, recidivism rates have significantly declined. For the U population, the recidivism rate was lower in 1972 than in 1967, but it was greater than had been the case in 1970. Again, this may be the other side of the "strike effect" alluded to earlier.

I have termed these termination and recidivism rates "crude." Each figure has significant faults. The termination figure is faulty because it includes as closures some cases in which the family moved to other forms of assistance (Social Security, for example) or to welfare in other counties. Movement to other forms of assistance generally is not what people who talk about welfare turnover think such terminations represent. The recidivism figure is faulty for one of the same reasons: Some people who leave welfare leave the county. If they come back onto welfare within a year, the fact will not be recorded in Alameda County data.

How significant are these problems? All told, 108 of the 342 cases in the 1972 FG sample left AFDC at some point during the year following the case sample month. Of these 108 departures, 10 percent involved a move out of the county, 12 percent were associated with a change in family composition not necessarily producing an improvement in family resources, and 6 percent involved a shift to another form of assistance. These figures are not cumulative; some cases involved changes of several types. The point is that leaving welfare is not always leaving poverty.

B. Interprogram Movement

People at the county welfare department tend to treat the U-FG distinction as not much more than an accounting convention. This project was initiated under the assumption that the two programs serve largely distinct populations. That working hypothesis proved to be wrong.

To give an impression of the interrelation of the two programs, I have tabulated the proportion of mothers in each program who would have at some time during their welfare experience prior to March 1974 experience in the other program. Seventeen percent of the mothers in the 1972 FG sample are recorded by the county welfare department as having had or to have in the future a period of assistance as part of an AFDC-U case. This proportion has been rising steadily: Only 11 percent of the mothers in the 1967 FG sample were ever recorded in a U case. The figures are more dramatic for AFDC-U cases. *Thirty-nine* percent of the mothers in the sample of families receiving assistance through AFDC-U in 1972 had been or would be at one time part of an FG case.

Although a small amount of movement from the FG to U caseload does occur as father returns or disabled fathers are declared fit to work, most of these changes are shifts from U to FG. About 22 percent of the cases picked up in the 1972 U sample had shifted to FG by the end of the year. A similar proportion was recorded for the 1967 and 1968 samples; for 1970 the proportion fell to 16 percent, presumably again because of the unusual composition of the caseload in that year.

In a few of these cases, the father had already left by the time of the sample month, and the transfer represents simply an administrative acknowledgement of his departure. In others, the transfer results from development of a disability by either the father or mother. The major cause, however, is desertion. One of the reasons for addition of Congressional provision for the U program was to remove the incentive allegedly created for family fragmentation when welfare was available only for families without fathers. In light of this intention, the substantial separation rates these data reveal present something of a paradox.

VII. Summary

In this paper I have described the growth of the Aid to Families with Dependent Children caseload in Alameda County over they decade which ended in 1975. The following facts and conclusions seem most important.

1. The basic "need" standard for public assistance under AFDC did not change for most families throughout this period. I have concluded that the major portion of caseload growth and change must be attributable to expansion of the "takeup" rate among families financially and demographically eligible. The principal exceptions to this conclusion are the result of (a) tighter work/job search requirements for welfare eligibles, especially after 1972, (b) the progressive restriction of the unemployment definition used for establishing eligibility of two-parent families for the AFDC-U program, and (c) the reduction in expansion and (after 1972) constriction of the range of earnings over which recipients could report and retain welfare eligibility. While all of these changes had some effect on the caseload, the dominant factor in the reduction in caseload growth after 1970 was exhaustion of the eligibles pool.

2. Administrative factors play an important role in AFDC eligibility determination. I have emphasized the importance of identification of "special needs" and measurement of work expenses in eligibility assessment and payments calculation. I have found evidence that the frequency of special needs identification was much higher at the beginning of the period

analyzed than at the end. I have also shown that work expenses were much more generously allowed in 1967 than was true in 1972. My impression is that the county is much more rigorous in application of regulations determining eligibility and payments now than was the case ten years ago. Standards certainly slipped in 1970, but much of this was a result of the overwhelming flood of new applicants for AFDC during that year. If the "exhaustion" story is correct, the experience of 1970 will never be repeated.

An additional test of the "exhaustion" hypothesis is provided by the most recent recession. By any measure the recession which began in the fourth quarter of 1974 and reached its trough in the first quarter of 1975 was far worse than the recession of 1969-1970. Nonetheless, the effect of the recession on the caseload was astonishingly small, as a glance back at figures 4 and 5 will indicate.

3. Administrative changes partially offset the effect of legislated changes in earnings "disregards" on work incentives. My data indicate that Alameda County responded to the introduction and subsequent liberalization of the work incentive provisions of the 1967 Social Security amendments by reducing allowed work expenses for working recipients. It is my opinion based on this research that recipients as a class would be better off with a flat work expense deduction. Certainly such a system would save a significant amount in administrative expenses. As it is, there is a gross disparity in work expenses granted from one recipient to the next, and no recipient knows in advance of taking a job just what will and will not be allowed.

4. The monthly accounting convention in AFDC is a potential source of horizontal inequity between families with erratic incomes who can achieve eligibility for a few months of the year despite relative large annual incomes and those whose steady but low incomes deny eligibility by being marginally above the needs standard every month. My results indicate that this cannot be a major problem under exising regulations. The number of families receiving welfare at any time during the year is only slightly over 20 percent greater than average monthly caseload size. Turnover is simply not that great. If the standards (including the assets test) for AFDC-U were not so strict, this might not be the case. Indeed, I find more turnover in 1970, when the AFDC-U eligibility standards were more generous, than was true in 1972. By any reasonable standard the AFDC-U program is not by itself an adequate program in income supplementation for poor two parent families. But its improvement must involve more than easing the restrictiveness of the unemployment test or loosening the assets standards. Some way of curing the myopia of the accounting procedure must be found.

5. The caseload at the end of the period covered by the sample used here was made up of families with younger, better educated heads than was true at the beginning. The new case for AFDC in 1970 was much more likely to be headed by a young white adult with a high school education than was true of cases already on welfare. Along with younger heads came smaller family size. It is not clear whether the decline in average case size is the result of lower fertility or simply only the product of the change in age distribution.

6. I found what appeared to me to be an exceptional amount of movement of mothers between the AFDC-U and AFDC-FG programs. In Alameda County it is inappropriate to view the two programs as serving distinct populations. By 1972 almost 40 percent of mothers in AFDC-U cases had already or would within the next three years be receiving assistance through AFDC-FG.

Footnotes

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[1] U.S. Department of Health, Education and Welfare, "Public Assistance Statistics," report A-2, SRS 65-03100 - SRS 75-03100.

[2] *Ibid.*

[3] California State Department of Benefit Payments, *Public Welfare in California,* March 1970.

[4] See F. Doolittle and M. Wiseman, "The California Welfare Reform Act: A Litigation History." University of California at Berkeley, Department of Economics Working Paper No. 71, August 1976. Citations for the regulation summary that follows can be found in this paper.

[5] This is not widely recognized.

[6] For a discussion, see D. P. Moynihan, *The Politics of a Guaranteed Income* (New York: Vintage Books 1973), Chapter 3.

[7] See *Oakland Tribune*, November 19, 1970, p. 1.

[8] See C. Rence and M. Wiseman, "The California Welfare Reform Act and Participation in AFDC," Department of Economics Working Paper No. 81, University of California, Berkeley, July 1976.

[9] *Ibid.*

[10] See *Oakland Tribune*, September 27 - October 1.

[11] Estimated from the average proportion of cases in our sample for each year which did not meet the criterion.

[12] See R. Booth and M. Wiseman, *The Alameda County Welfare Sample Variable Location and Code Book* (Berkeley: Institute of Business and Economic Research, 1976).

[13] Bradley R. Schiller, "Turnover Rates in Public Assistance Programs," *Welfare in Review*, September-October 1970, pp. 27-29.

[14] C. Peter Rydell, Thelma Palmerio, Gerard Blais, and Dan Brown, *Welfare Caseload Dynamics in New York City* (New York: The RAND Institute, 1974, p. xiii.

[15] Caseload figures for Alameda County are from departmental records. These numbers are slightly lower than the official published caseload statistics. The official statistics cover all cases on at any time during the month not the number of cases receiving assistance at month's end.

[16] See M. Wiseman, "The Alameda County Welfare Sample: Graphs, Tables, and Stories," Department of Economics Working Paper No. 80, University of California, Berkeley, 1976, p. 49. Henceforth cited as "Graphs."

[17] Wiseman, "Graphs."

[18] This problem is investigated in David Keefe's forthcoming dissertation.

[19] M. Wiseman, "Change and Turnover in a Welfare Population," Department of Economics Working Paper No. 70, University of California, Berkeley, 1976, p. 42. Henceforth cited as "Change."

[20] Wiseman, "Change," pp. 46-48.

[21] Wiseman, "Change," Section V.

[22] This strategy is described in Mark Aaronson, *Legal Advocacy and Welfare Reform: Continuity and Change in Public Relief,* Ph.D. dissertation, University of California, Department of Political Science, 1975.

[23] Doolittle and Wiseman, "Litigation History," p. IV. 14.

[24] We looked for evidence of receipt for as long as a month at any time.

CHANGE AND TURNOVER IN A WELFARE POPULATION

by

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CHANGE AND TURNOVER IN A WELFARE POPULATION

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I. Introduction

Analysis of the effect of income transfers on household behavior has until recently been carried out almost exclusively in a comparative static framework. The spirit of the analysis is simple enough: Households are first modeled as making labor force participation decisions by comparing the marginal utility of earnings from labor to utility lost by foregoing "leisure." The household's allocation of time given wage rates and other income in the absence of transfers is then compared to the allocation taking place when a system of transfers is introduced. Because of the income effect of the guarantee and the price effect of the implicit tax rate embodied in most income-conditioned transfers, households are expected to reduce labor supply when such programs are made available. The analysis leads to a prediction that because of labor supply effects the budgetary cost of increases in income-conditioned transfers will be greater than the initial increase in income they bring about. Experimental evidence suggests that such effects are likely to be small.[1]

This approach seems appropriate if most poor households would, in the absence of policy designed to supplement their incomes, stay in need. But if poverty is a transient phenomenon or if the object of policy is not only to supplement income but to move persons out of dependence, it is important to consider not only the immediate effect of transfers on behavior but also their effect on changes which occur over time in household well-being. Thus the issue becomes one not of comparative statics but of comparative dynamics. In this context analysis of transfer programs requires a model not only of choice between labor and leisure but also a clear understanding of the cycle of persons and families into and out of poverty and the role of transfer programs in alteration of such movements. Propositions about these dynamic changes are difficult to deduce from propositions about household preferences. They must rest in large part on information about the events that surround movement into and out of poverty by real families.

The Aid to Families with Dependent Children (AFDC) program is a natural place to begin looking for information on household dynamics in a population for which transfer policy is relevant. Surprisingly, only a very modest amount of data is available on AFDC recipients,even though AFDC is the income-conditioned general transfer program that reaches the greatest number of nonaged low income families. The U.S. Department of Health, Education, and Welfare does on occasion collect cross-section information on demographic characteristics of recipients. Little is collected in the HEW surveys on past histories of welfare families, and information on what happens to such families after they are sampled can be pieced together only by crude attempts to match cohorts in one year's sample with corresponding cohorts in data for preceding or succeeding years.[2] Data from outside the administrative structure of AFDC is also sparse; as large as the program is, most national samples of households include only a few families on AFDC. In many data sets--the census public use samples, for example--it is difficult to separate AFDC recepients from those participating in other transfer programs such as general assistance. Those looking for more detail on changes in the situation of such families over time are, as a result of these deficiencies, forced to collect their own data, as in the New York RAND project,[3] or to rely on pseudo-longitudinal files that are either dated or of questionable quality.

There are political reasons for the lack of information on AFDC. The program is operated by the states and in some cases by counties within states. In general the states do not have a strong incentive for gathering detailed data on welfare recipients or on the population "at risk" of welfare dependence. Data collection is also hampered by a general attitude that the AFDC system is "bankrupt" and should be replaced by something more comprehensive. This seems to be a consequence of the movement for welfare reform during the past few years. Welfare reform enthusiasts have tended to describe proposed changes in national transfer systems as "revolutionary." The notion that FAP or any other AFDC substitute is radically different from current programs tends to have as a corollary the implication that research on the present system is unimportant. If research is of little value. so are the data for that research.

Reflection shows this to be nonsense. Any welfare reform scheme must involve in large part the same families that are currently served by AFDC. Few of the problems encountered in the existing welfare reform program with work incentives, accounting, fraud, and eligibility determination will vanish when the acronym for welfare is altered. And casual observation indicates that, despite all the sound and fury about welfare reform, AFDC lives on, and on.

This paper will attempt to refocus the attention of people concerned about income maintenance and poverty on AFDC. My proposition is the simple one that a great deal can be learned about movements in and out of poverty and the effect of family characteristics, external factors, and policy on such movements by looking at what happens to families on this kind of welfare. I shall attempt a proof by construction, or, to use a term more in turn with the times, by demonstration. I concentrate in this paper on factors associated with leaving poverty and welfare dependence. Considerable emphasis is placed on detection of program effects on the changes analyzed. The population "at risk" and factors which bring people onto welfare for the first time or back once they leave are not discussed. To some extent the characteristics of all families "at risk" of dependence can be inferred from those who have taken up welfare. I hope to take up the recidivism problem in a later paper.

In section II below I briefly review the structure of the AFDC system. I argue that changes in the program over the past few years have, at least in California, been sufficiently large to provide data on the effects of changes in transfer policy on household behavior. In section III, I describe a method I have employed for obtaining from welfare data from Alameda County, California, information on family characteristics of welfare recipients and movements to and from dependence by welfare recipients in the AFDC-FG and AFDC-U programs. In section IV the methodology for multivariate analysis of these data is outlined. Results for families on AFDC-FG are presented in section V, and the results for AFDC-U are in section VI. The paper is concluded with a summary of conclusions and recommendations for future research.

I am anxious that my concentration on welfare terminations in the material which follows not be misinterpreted. I personally believe that both movements to *and* from welfare are "good" things. Movements onto aid are good things because families accepted to welfare in Alameda county are generally in desperate circumstances. Once on welfare the payments they receive plus the bonus value of foodstamps and other services the county provides approximate the poverty standards. As a result of eligibility determination procedures, when a family leaves welfare it has generally achieved a living standard above the poverty level. Looking at terminations from welfare under these circumstances is similar to looking at movements out of poverty. I shall show later in the paper that the cases in which the welfare interpretation of case terminations is ambiguous or in which movements out of poverty are not associated with leaving welfare can be handled reaily with these new data. The point is that it is poverty and not welfare status with which I am ultimately concerned.

II. The Welfare System

The Aid to Families with Dependent Children program has changed substantially in California over the past decade. It is possible that these changes have been sufficiently pronounced to influence the bahavior of persons receiving assistance and to provide "experimental" information of the effects of such changes. In this section I will briefly describe the

AFDC program, outline alternations that have occurred in it in the recent past, and speculate on the effect of the major changes identified on households receiving assistance.[4] I will concentrate on the years 1967-73, since it was during this period that most significant changes occurred.

A. Determination of Eligibility

AFDC was established in the Social Security Act of 1936. The program is operated by the states (and, in some states, through county governments) under federal guidelines and with considerable federal cost sharing. The federal government sets general demographic standards for admission to the program (or, more precisely, for those cases in which federal financial participation will occur) and for measurement of income in eligibility and payments calculation. The exact amount to be paid eligible persons and the income and other resource standards used to determine eligiblity matters are left up to the states.

Families seeking assistance through AFDC are required to meet both demographic and resource standards for eligiblity. The key demographic restriction is that the family must include children under twenty-one years of age. If both parents of the child or children are present in the family, one must be disabled or involuntarily unemployed. Mothers in female-headed families with no children under school age and the unemployed parent in families qualified on the basis of unemployment are required, as a condition of eligibility, to register for work at local employment offices and to undertake retraining programs when they are available. Families may qualify on the basis of unemployment of either the father or the mother,[5] but the overwhelming majority of cases involve jobless fathers.

The resources standard for AFDC eligiblity involves both income and assets. To obtain assistance, family income minus certain allowable work expenses must be less than a standard of "need." The need standard is an estimate of the cost of a minimum standard of living and varies according to family composition and, in California before October 1971, location. Like all other states, California combines the income test with assets restrictions that prevent payment of assistance to households with certain types of wealth. The AFDC program is fundamentally a "guaranteed consumption" rather than a "guaranteed income" program; low income is a necessary but not a sufficient condition for benefit receipt. It is presumed that families should support themselves through asset liquidation when such means are available.

Movements onto welfare are typically associated with either a change in household composition or are the consequence of a loss of income. Common composition changes are those involving a birth out of wedlock to a woman previously off welfare or the desertion of a family by the father. These events usually cause income available to the family to be insufficient for needs and make the new single-parent family eligible for welfare. Common income changes leading to eligibility are the result of loss of job, inability to find full-time work, or inability to earn a sufficient amount when working to cover needs. Cases qualifying on the basis of parental unemployment are included in the AFDC-U program (U is for unemployed parent); cases qualifying on other grounds are included in the AFDC-FG (family group) program. All AFDC-U families include or have recently included both parents--they are "headed" by males. The major portion of FG families are headed by single parents, most but not all of whom are females. Two-parent families in which one adult is disabled make up the remainder of the FG caseload.

B. Movements Between Programs and Off Welfare

Once on welfare it is possible for a family to shift from the U to the FG program or from FG to U if a parent leaves, returns, or becomes disabled. The distinction between the U and FG programs is maintained because inclusion of "unemployment" as one of the grounds for deprivation sufficient to qualify families for assistance is a state option. Fewer than half of all states have such programs, but most large states, including California, do.

Movements from welfare can involve loss in eligibility because of demographic change or occur because income from nonwelfare sources rises to exceed the standard of need. Such changes are frequently interconnected.

Both resources and composition change, for example, when a welfare mother marries a man with a good job who is willing to adopt her children. One well-known anomaly in the AFDC system is that resources are evaluated differently on intake to welfare than is the case once a family is declared eligible for benefits. In determining eligibility, earnings net of certain work expenses are summed with other resources for comparison with the standard of need. Once eligibility is established, "net income" is calculated by subtracting work expenses, the first $30 per month of earnings and one-third of gross earnings about $30 are deducted. It is only when *this* amount exceeds the standard of need that eligibility is lost. As a result it is possible for families on welfare to continue to receive benefits even when their earnings reach levels that would deny eligibility on initial intake and exceed official poverty standards. Payments are related to the difference between a family's standard of need and its income adjusted by both work experience and the disregarded $30 and one-third of gross earnings above $30. Actual payment calculation is described below.

C. Program Changes, 1966-1975

The AFDC program in California has changed substantially over the past ten years. Some changes have occurred because of federal action and are common to all state programs; others have occurred only in California.

1. Changes in Demographic and Behavioral Restrictions.

The principal changes in the demographic requirements for program participation have occurred in the definition of "unemployment" suitable for establishing deprivation and in the work tests applied to welfare recipients. Before November 1, 1969, a family could qualify for assistance on grounds of unemployment if the father or mother had involunarily worked less than 173 hours in the month prior to application. This was reduced to less than 152 hours in November 1969, to 130 hours in July 1971, and to the current restriction of less than 100 hours per month or 25 hours per week by changes brought about as a result of implementation of the California Welfare Reform Act in October 1971. Clearly the early standard was extremely generous, making California AFDC-U something almost equivalent to a negative tax plan. Welfare work registration and training requirements were increased over the period 1967-1973 both as a result of the Work Incentive Program originally introduced with the Social Security amendments of 1967 and the revised WIN II program that followed in 1972.

For families ever attaining eligibility, the progressive tightening of the standards for eligibility under the U program should reduce, *ceteris paribus*, the likelihood of a father working while on welfare. As the qualifying definition of U is reduced, even marginal jobs will be more likely to bring about eligibility loss. The effect on likelihood of termination of the changes in the U eligibility depends upon (a) whether or not the family is capable of reaching a standard of living which it views as superior to that available with AFDC when the unemployed parent works, and (b) the work history patterns which typically led to independence before the hours restrictions were applied and tightened. If families cannot do better than the welfare living standard on their own, the unemployed member may defer taking a job which would lead to loss of eligibility. After 1969, and especially after 1971, this meant all but very short-term employment had to be foregone. For such families I would expect the eligibility standards changes to reduce both the likelihood of job taking and, in consequence, the likelihood of leaving welfare.

If most families on assistance because of unemployment leave poverty through a discontinuous leap to full-time jobholding, the hours reduction in the AFDC-U unemployment standard should make no difference to their propensity to do so. If the more common pattern involves initial part-time work followed by gradual progression to full-time employment and earnings in excess of welfare living standards, the reduction will have greater consequence. The contraction of the AFDC-U unemployment standards will, in this case, increase the cost of the intermediate stage in the move to independence. By so doing, the likelihood that such moves will be undertaken at all is probably reduced.

The changes in work registration and training requirements are unlikely to have had much effect on recipients before 1973. Implementation took a long time, and training opportunities were frequently in short supply. In general, failure to satisfy the work registration/training requirements of WIN does not disqualify a family for welfare. It simply brings about deletion of payments for the recalcitrant labor force participant. However, such requirements should increase the rate at which families leave welfare by reducing the benefits gained from staying on. If the "gradualist" model of labor force participation outlined above is an accurate description of behavior, the WIN system may help bring termination in a positive way, since persons involved in on-the-job training are frequently exempted from the maximum hours rule.

2. Changes in Payments.

Payments to families on welfare which have no other income were determined throughout the period 1966-75 by a schedule of maximum aid payments in which the state would financially participate. This grant was supplemented after 1968 by food stamps, and in addition from 1966 low income families, including those on public assistance, could obtain medical care at low or no cost through Medi-Cal, the state's version of the national Medicare program.

The state did not change its basic standard of maximum aid from 1951 to 1971. As a result, in real terms the standard was declining through the first four years of the period studied here. The payment standard was enhanced substantially in June and October of 1971. The first change resulted from pressure from the U.S. Department of Health, Education and Welfare and others determined to force the state to adopt a cost-of-living adjustment procedure for welfare benefits. The October change was brought about by the California Welfare Reform Act.

Between 1968 and 1971 the food stamp cost schedule was adjusted at more or less regular intervals for changes in the cost of living. These changes offset the decline in the real value of maximum aid payments so that the sum of the basic welfare payment plus the cash value of the food stamps which recipients could obtain stayed virtually constant in real terms. This "guarantee" jumped in 1971 and then remained approximately constant through to the end of 1973. In Figure 1 I have plotted the constant (March 1970)

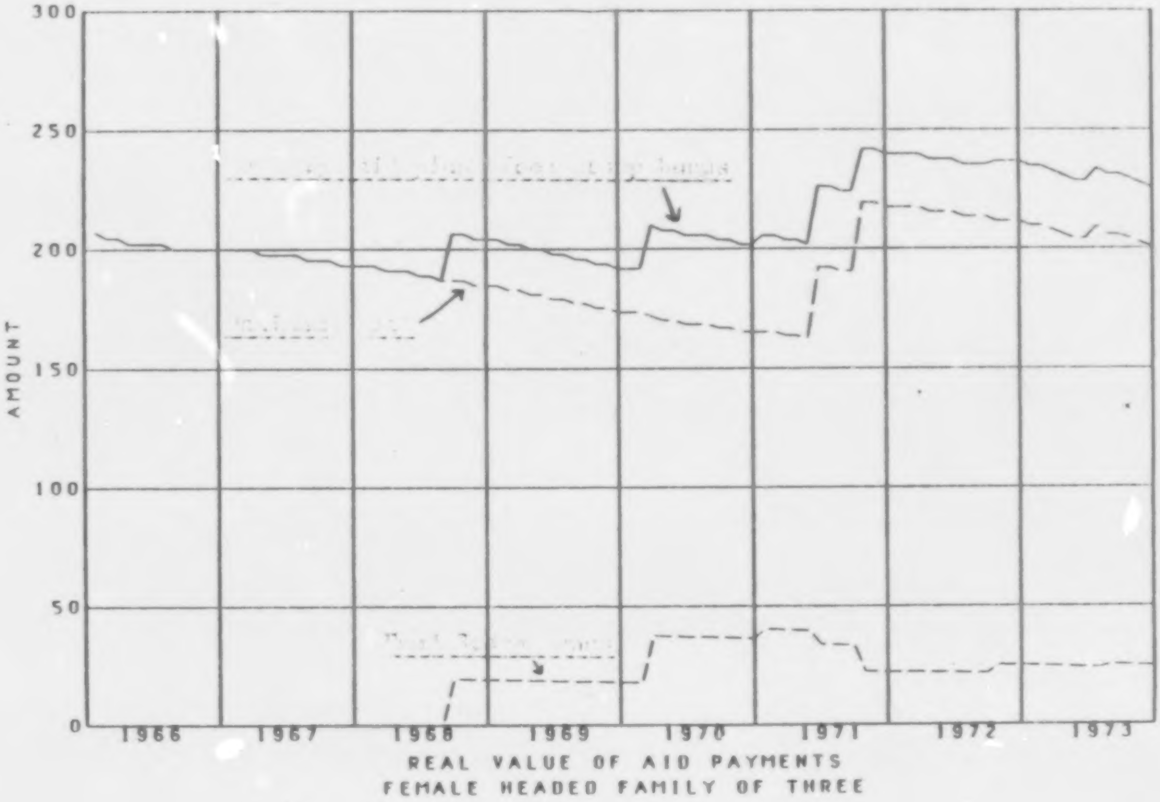


Figure 1

dollar value of the combination of welfare payment and food stamp bonus value for a family of three throughout the period.

My conclusion is that there occurred only one substantive change in Welfare benefits during the entire period 1967-1973. This will prove important for the analysis which follows later in the paper.

3. Changes in Treatment of Earnings and Other Income.

In contrast to the lack of change in the "guarantee" for the AFDC system in California between 1967 and 1973, a number of alterations were made in procedures for adjusting grants on the basis of earnings and other income of welfare families. The time period is usefully subdivided into four payments "regimes."[6]

Procedure 1. Before July 1, 1968, all earnings net of involuntary deductions (i.e., those for social security, authorized work expenses, childcare, union dues and the like) which exceeded the difference between a family's calculated "need" and the maximum aid payment reduced aid payments dollar-for-dollar. Since work expenses tended to rise with earnings, the welfare "tax rate" when calculated on the basis of gross earnings was not the legendary 100 percent, but it was substantial, especially since during this early period the gap between "needs" and maximum aid was not significant. Income from other sources--absent father payments, ATD payments to adults in the family, etc.--reduced maximum aid payments dollar-for-dollar.

Procedure 2. The 1967 Social Security Amendments authorized states to begin disregarding part of earnings of AFDC recipients in benefit calculations as a work incentive. After July 1, 1968,California counties began calculating grants by (1) computing net earnings--the difference between gross earnings and work expenses and involuntary deductions, (2) subtracting from net earnings $30 per month (for full-time workers) plus one third of the difference between net earnings and $30, and (3) reducing the maximum aid payment dollar-for-dollar by the amount that the figure calculated in step (2) exceeded the difference between need and maximum aid for the family. The consequence of this change was to increase the maximum amount of wages and salary a family could receive and retain welfare eligibility. Income from other sources continued to be treated as before.

Procedure 3. Due to the Sacramento County Superior Court's decision in *Nesbitt v. Montgomery*, after February 1, 1970 the treatment of earnings was changed again. Step (2) in the previous procedure was altered so that the one-third of the difference between *gross* and net earnings in excess of $30 per month was deducted from earnings before payments calculations were made. This change raised the "breakeven" point--the level of earnings at which eligibility was lost, and lowered the loss in benefits associated with each level of earnings below the breakeven amount. Work incentives were further enchanced because the "need" standard was periodically adjusted for changes in the cost of living, while the "maximum aid" standard was not. As the gap between the two increased, the range of earnings permitted while eligibility was retained expanded.

Grant calculation and its consequences under procedure 3 are best illustrated with an example. Consider a woman with two children age five and ten living in Alameda County in March 1970. The family's "need" was estimated to be $270.95 per month or $3,251.50 per year. Her maximum aid payment, unchanged in nominal amount within her memory, was $172.00. Without work or other income this plus foodstamps (with bonus value of about $40.00 was all she got.

If she received income from a source other than earnings, no benefits were lost until the income exceeded the difference between "need" and maximum aid. If she received earnings, her benefits began to decline when "countable income" exceeded the difference. "Countable income" was defined under procedure 3 as gross earnings minus involuntary deductions minus work expenses minus childcare expenses minus $30 minus .33 (gross earnings in excess of $30, assuming full-time work). Assuming for simplicity no childcare expense, $50 per month in work expenses including union dues, and involuntary deductions totalling 1/9 of her pay check, this meant that she could earn about $304 per month before suffering any loss of benefits and $614 before losing welfare eligibility. Under calculation procedure 2 the corresponding figures had been $256 and $545.

I emphasize: the steps from procedure 1 to procedure 3 plus the gradual inflation-induced expansion of the gap between the need and maximum aid figures raised the maximum earnings cutoff for welfare eligibility and lowered the average "tax rate" on each intermediate level of earnings. At the same time the "guarantee" remained virtually constant in real terms. As the needs-maximum aid gap widened, the treatment of income from sources other than earning was liberalized, since grants were only reduced on the basis of outside income in excess of the gap. *Ceteris paribus,* these changes should reduce the likelihood of welfare termination but increase the likelihood that recipients take jobs.

Procedure 4: On October 1, 1971, counties in California began using the grant calculation procedure authorized by the California Welfare Reform Act. The grant authorized deduction of "countable income" directly from maximum aid. The effect of this alteration and the simultaneous increase in the maximum aid standard already described was to reduce the amount of earnings which a family could receive with no loss in benefits and to lower the earnings "cutoff" for welfare eligibility. For the sample family described above, the cutoff point fell to $549. For all families the average "tax rate" on earnings increased. In addition, since countable income was deducted directly from maximum aid, the "tax rate" on outside income was restored to 100 percent.

I emphasize: the step from procedure 3 to procedure 4 lowered the maximum earnings cutoff point for welfare eligibility and raised the average tax rate on each intermediate level of earnings. At the same time the guaranteed was increased substantially in real terms. Both effects should reduce the likelihood of job-taking by recipients and of welfare termination for families without other income.

For families with other sources of income, these changes should increase the likelihood of termination. Any given amount of outside income reduced welfare payments by more after October 1971 than had been the case before. As a result, less was lost for a family with such income on welfare termination, and job-taking incentives were increased. Also, after the CWRA outside income reduced the range of earnings consistent with maintaining eligibility by more than had been the case before, and this also raised the likelihood of termination.

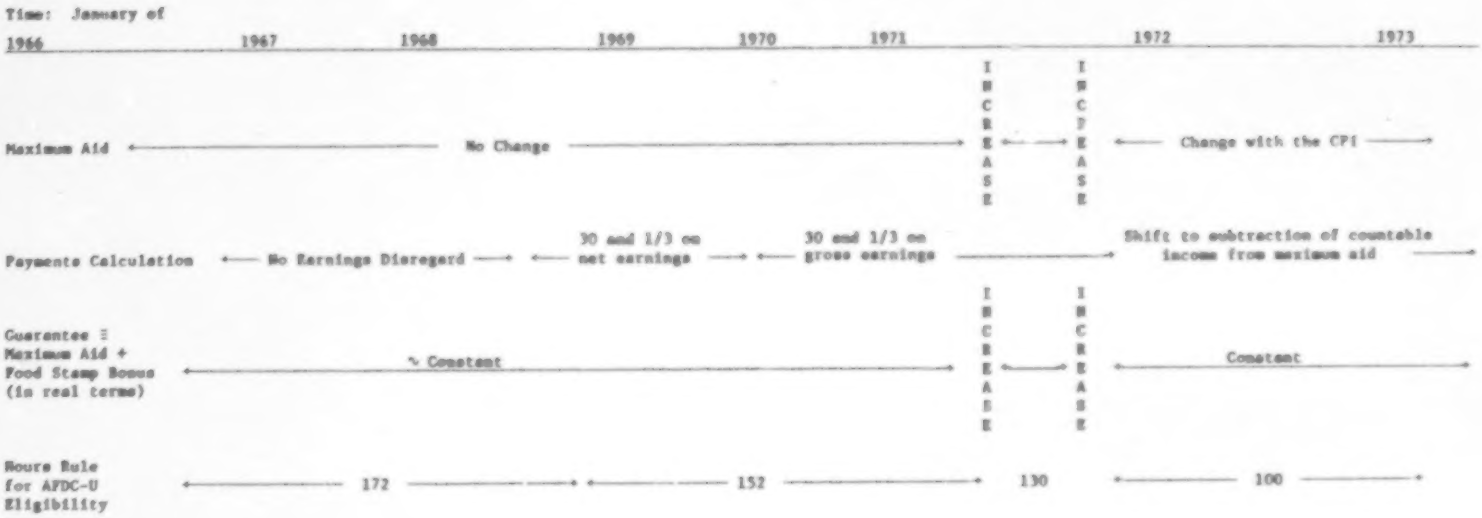
Space does not permit more detailed analysis of these program changes in this paper. I have done this elsewhere.[7] The important point is that significant changes in the operation of AFDC in California occurred over a relatively short period of time from 1967-1973. I have marked the changes in a time chart in figure 2. These changes provide important experiments for answering questions in welfare policy.

Consider first the FG program. I have argued that over the period 1967-71 the basic benefit package available to recipients did not change, but work incentives were progressively increased. Were these changes associated with greater likelihood of recipient job taking? After October 1971 the basic benefit substantially increased, incentives for employment were reduced, and modest training requirements were implemented. What was the net effect of these changes on the likelihood of job taking?

The changes in work incentives in the system over the period 1967-71 were associated with a steady increase in the earnings"breakeven" point for welfare eligibility. While increasing work incentives, such a shift probably lowers termination rates. Was this the case? To what extent was the effect of the higher breakeven point offset by a greater tendency of recipients to "work their way off" welfare when benefits are low and marginal tax rates on low levels of earnings are small?

Figure 2

TIME CHART OF MAJOR AFDC ADMINISTRATIVE CHANGES


Time: January of
1966
1967
1968
1969
1970
1971
1972
1973
Maximum Aid
No Change
INCREASE
INCREASE
Change with the CPI
Payments Calculation
No Earnings Disregard
30 and 1/3 on net earnings
30 and 1/3 on gross earnings
Shift to subtraction of countable income from maximum aid
Guarantee ≡ Maximum Aid + Food Stamp Bonus (in real terms)
~ Constant
INCREASE
INCREASE
Constant
Hours Rule for AFDC-U Eligibility
172
152
130
100

For the U program I have argued that the alterations in the unemployment criterion should produce a progressive reduction in the likelihood that unemployed parents in AFDC-U families become employed and, in consequence, that such families leave welfare. Did this occur? To what extent was it offset or exacerbated by changes in the basic payments schedules after 1971?

Finally, I have pointed out that the positive effect of having income from sources other than earnings on the likelihood of welfare termination should be greater after implementation of the CWRA than before. Is such an effect observable?

These questions are dynamic in focus. They all relate to the likelihood of occurrence of changes in family status. Answering them requires data that permit analysis of changes in behavior over time. Such data and my procedures for their analysis are described next.

III. The Data

The changes in program administration and benefits paid described in the preceding section and outlined in Figure 2 provide something of an experiment for a limited evaluation of program effects on typical histories of persons on welfare. In this section I describe a sample I have collected for this purpose. In the next I outline my analytical procedure for identifying such effects.

The analysis in this paper is based on a new sample of welfare data obtained directly from the files of the Alameda County, California, Welfare Department. Alameda County is urban, includes the S.M.S.A. co-central city of Oakland and has the third largest welfare caseload in California.

In collecting these data the following procedure was employed:

(1) A random sample of the caseload in each of the years 1967 to 1972 was selected from the accounting records for payments made. The sample was distributed across the twelve months of each calendar year to conform to the pattern of seasonal variation in the caseload.

(2) Files for all cases were withdrawn from storage or, where appropriate, from the county welfare offices. Data from the files were employed to collect information on family characteristics, background, and history on welfare in Alameda County. An enormous amount of information was discovered in the files, far more than might be anticipated on the basis of the quality of information on recipients derived from standard sources.[8]

(3) The data were anonymized, transferred to coding forms, and then key punched for machine analysis. Elaborate attention was paid both to accuracy in transcription and to protection of the privacy of the households involved. The completed file consists of 3,158 cases--1,450 households from the U and 1,708 from the FG program. The distribution of the samples by year appears in table 1.

(4) The case records were checked extensively for internal consistency and errors.

Each completed case file includes extensive data on the sampled household for the eleven months following the date ("sample month") for which the household was picked from the rolls, plus background information on time on welfare prior to the sample month and the four-quarter period ("sample

TABLE 1

ALAMEDA COUNTY WELFARE SAMPLE

Year	Program	Average County Caseload	Number of Cases Sampled
1967	FG	10,313	307
	U	1,394	255
1968	FG	12,106	327
	U	1,492	270
1969	FG	15,549	190
	U	1,794	197
1970	FG	20,630	347
	U	3,092	305
1971	FG	23,355	195
	U	3,250	113
1972	FG	22,123	342
	U	2,546	310
Total 1967-72	FG	17,346	1,708
	U	2,261	1,450

Source: Michael Wiseman, "The Alameda County Welfare Sample: Graphs, Tables, and Stories," Department of Economics Working Paper No. 80, University of California at Berkeley, July 1976, pp. 4-5.

year") used for most extensive analysis. The data set is thus a combined cross-section and time-series resource, permitting inferences about the determinants of changes in well-being of families on welfare under the range of economic conditions experienced between January 1967 and December 1973.[9]

IV. The Method of Analysis

The basic procedure adopted in this paper is to treat the probability that change in the dependency status of a family on welfare or the employment status of its head as a function of four types of variables. These variables identify (1) administrative procedures of the welfare system, (2) general economic conditions, (3) personal characteristics of the family head, and (4) services the family has received from the welfare department. Separate analysis is done of the AFDC-FG and AFDC-U samples. In this section I discuss the dependent variables, the horizon over which the dependent variables are defined, independent variables common to analysis of both populations, the functional form adopted, and restrictions imposed upon the basic sample as it appears in table 1 for actual analysis.

A. The Dependent Variables

This paper concentrates on four changes of state welfare: (1) movements off welfare, (2) movements out of poverty, (3) acceptance of employment, and, for AFDC-U families (4) family dissolution.

Movements off welfare (OFF AID). The most common object of analysis in studies of AFDC has been movements out of the program.[10] As a dependent variable for a study of dependency, however, "off welfare" has important deficiencies.

One shortcoming is that moving off welfare can mean different things at different times. As the numerical example presented in the previous section indicates, a change in employment or other income that would have produced loss of welfare eligibility under one payment and eligibility calculation procedure might not have done so under another. Admittedly, a family's being on or off welfare has important political and fiscal consequences. But if the objective of research is to find out more about the determinants of family behavior rather than administrative caprice, it is the changes families make, and not the actions of welfare administrators, that should be analyzed.

A second shortcoming is that "leaving welfare" is not necessarily the same thing as "leaving poverty" or "leaving dependence." Families leave welfare, among other things, because the youngest child reaches 18 and leaves school, because they move to another state to assume welfare there, because they are transferred to another aid program, and because the mother is killed in an automobile accident and the children are transferred to foster care. These reasons are not atypical. They do not constitute the type of "closures" that are generally what people have in mind when they analyze welfare turnover.

In the analysis that follows the likelihood that a family will leave welfare is used as a dependent variable, but terminations include only those changes that constitute clear movements out of dependence. For families in the AFDC-FG sample, marriage of the head was counted as such a change. One of the advantages of the Alameda County Welfare Sample is that these data permit such a restriction to be applied. Data on disposition proved available in virtually all closures, even those involving movements out of the country. For purposes of comparison, some models will be estimated using the unrestricted definition to test the sensitivity of the results to the definition of welfare termination employed.

Movements out of poverty (OFFPOV). To eliminate the "moving target" problem created by the varying earnings cutoff point for welfare eligibility, I also use below as dependent variable in analysis of the FG sample "departure from poverty" as measured by the Orshansky poverty threshold for the family in constant dollars.[11] For this purpose the sample is restricted to families initially poor; "successes" are those which experience an increase in nontransfer income that brings family income from sources other than welfare above the poverty standard. I don't, in most cases, have evidence on family incomes for families after they leave welfare, but since throughout this period families categorically eligible for the FG program who have income from any source less than the Orshansky standard were eligible for assistance, it seems reasonable to assume that if families leave dependence for a reason satisfying the OFFAID criterion described above, they are better off than the poverty standard and satisfy the OFFPOV criterion as well. Use of the "off poverty" standard will provide an important test of the sensitivity of the results of use of the "off welfare" variables to elimination of effects generated by variation over time in the range of earnings and other income consistent with maintenance of eligibility.

Movement into employment (EMPLOY). My data do not permit detailed analysis of labor force participation or employment in terms of hours or days. They do allow me to distinguish between recipients who hold jobs of sufficient importance to be acknowledged by the Welfare Department and those who do not. Therefore, in addition to the two dependent variables described above, I will use also the transition from unemployment to employment of the "head" of the family. By this I refer to the male head of an AFDC-U case and the female adult in an AFDC-FG case. The sample for this purpose is restricted to families for which these persons are initially not working. Movements into jobs include both those that simultaneously bring about welfare termination and those which do not.

Fragmentation (FRAG). Analysis of the Alameda County welfare sample indicates that movement of families from the FG to U program and back is a frequent occurrence. In another paper I have concluded that it is inappropriate to view the two programs as serving distinct and separate populations.[12] To cite one sample statistic, my data indicate that over one-third of the mothers in AFDC-U cases will be on welfare in any FG case at some time during their residence in Alameda County.[13] While a comprehensive analysis of the factors leading to family fragmentation is not the object of this paper, at attempt is made to relate personal factors, program characteristics, and economic conditions to the likelihood that fathers will leave AFDC-U households.

B. The Horizon

Each of the changes described above must be defined over a specified time period. A tradeoff is encountered in the choice of this "horizon." The more distant the horizon in time from the point at which initial case status is defined, the greater the number of changes that are observed. All of the events defined by the dependent variables are relatively infrequent occurrences, so this is important. The drawback is that for long horizons specification of labor market conditions, administrative procedures, and even things like family size and mother's age become ambiguous. Job market conditions change on a month-to-month basis, and the more remote the horizon the more observations one has in which one part of the period lies in one administrative "regime" and the remainder lies in another.

In this paper I have exclusively used a three quarter time period for defi[illegible]n of change of state. This movement out of dependence means a family observed on welfare at the beginning of one month (say February) was no longer there at the end of the second month following (April). When the term "quarter" is used I am referring to such three-month intervals; the first quarter for each observation begins on the first day of the month in which it was sampled. Since families were sampled from the rolls in all months, such quarters do not coincide with calendar quarters.

C. The Independent Variables

Basically the same set of independent variables is employed in each of the models estimated below. Since certain problems in specification are shared between the FG and U analysis, they can be described once and for all here. I have used as much "control" as possible in these models because, as I have discussed elsewhere, the demographic composition of both the U and FG caseloads in Alameda County changed substantially over the period covered by the sample.[14]

The independent variables are divided among eight sets: (1) administrative procedures variables, (2) economic conditions variables, (3) family size variables, (4) personal characteristics variables, (5) work experience variables, (6) welfare service variables, (7) family income variables, and (8) certain other variables included in the fragmentation models. A complete catalog of all variables used at any time in analyses of the AFDC-FG sample appear in Appendix I. The corresponding list for AFDC-U is in Appendix II.

Administrative procedures variables. Because of the complexity of benefit calculation schemes and the relative constancy of the welfare "guarantee" over the period covered here, I have not tried to estimate "tax" and "guarantee" effects on family behavior under AFDC. Rather, I use in both the FG and U models a set of three dummy variables, AFDC1, AFDC2, and AFDC3, to demarcate the four payments procedures described above. The coefficients of variables always define the effect on the probability of occurrence of the dependent variable of the switch from the status quo before July, 1968 to the procedure in effect during the three months covered by the observation.

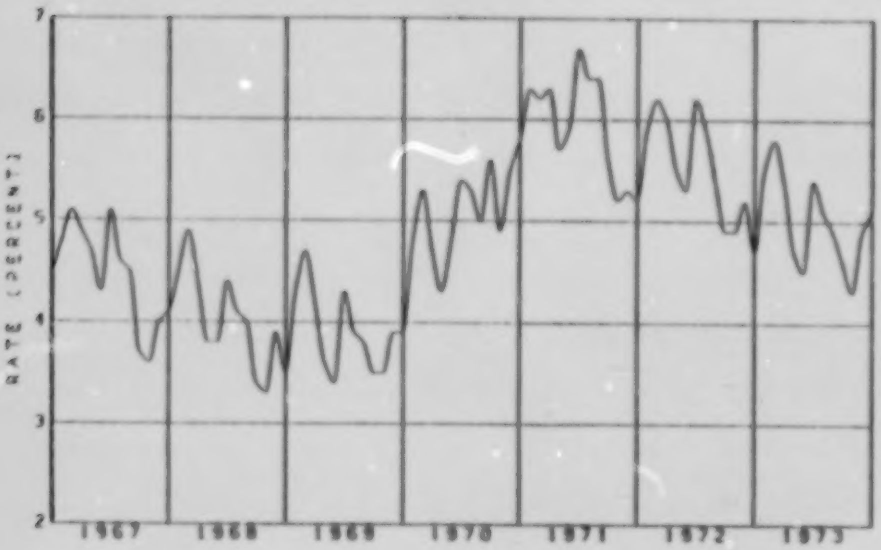
As figure 2 indicates, the changes in the definition of involuntary unemployment used for determining eligibility for the U program all occur within three months of changes in the payments calculation procedures. As a result, I have not attempted to separately identify the effects of these adjustments. Practically speaking, AFDC2 corresponds to the first period of significant constraint of the U definition (to 152 hours) and AFDC3 corresponds to the period of the second and third constraints that lowered the definition to the present 100 hours of employment or less.

Economic conditions variables. To control for labor market conditions I employ two types of variables. The first is the unemployment rate for the Oakland-San Francisco S.M.S.A. This is measured both at the beginning of the three month sample period and at the end in an attempt to gauge both level and change effects of unemployment rates on the transitions selected for dependent variables. I have plotted this variable in Figure 3. These unemployment variables are unsatisfactory for at least three reasons: (1) The only complete series available for the period covered by the sample is based on extrapolation of data on unemployment insurance claims to joblessness for the entire labor force.[15] The divergence of the numbers so derived from unemployment rates calculated from, for example, the current population survey,is well known.[16] (2) The series covers the entire six county S.M.S.A. and may not accurately reflect conditions in labor markets to which Alameda County welfare recipients have access. (3) As is obvious from figure 3, the data are not seasonally adjusted. In some respects this is desirable, since the actual level of joblessness may be what counts in determining whether or not welfare recipients increase earnings and other resources and leave assistance. For this reason I did not attempt a seasonal adjustment on my own. On the other hand, part of the seasonal variation is due to variations in labor force participation by youth and other persons who may not compete directly in the markets in which recipients are employed, and this weakens its relevance to economic conditions faced by adult welfare recipients in Alameda County.

To correct for part of the shortcomings of the unemployment data I have also included in the model below a variable *ERT* which measures the change in the ratio of employment in industries in which workers are covered by unemployment insurance to total Alameda County population in the 16-64 age group over the three months of each observation on change of state. Since coverage was expanded somewhat during the time period covered by the

Figure 3

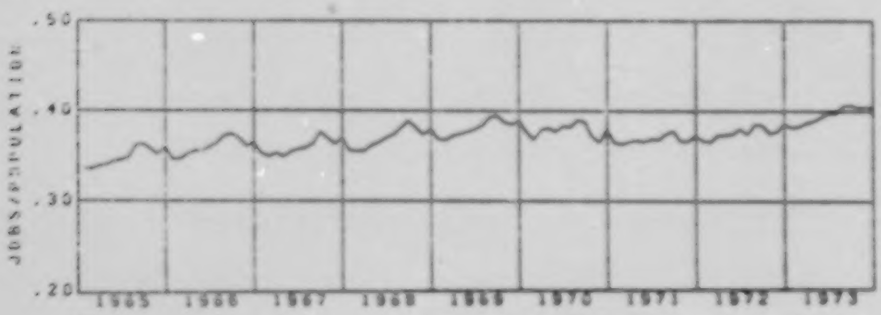
UNEMPLOYMENT RATE, SAN FRANCISCO-OAKLAND S.M.S.A.
1967-1973



Source: U.S. Department of Labor

Figure 4

RATIO OF JOBS FILLED TO WORKING AGE POPULATION
ALAMEDA COUNTY, 1965-1973



Source: Data Supplied by California Employment Development Department sample, the employment number was limited to those jobs covered throughout. This variable is superior to the unemployment measure in that it identifies the rate of employment increase specifically in Alameda County. It is deficient in that welfare recipients do not all work in Alameda County, and all Alameda County jobs do not go to county residents. Also, the employment series on which the variables is based does not include employment in government or certain service areas such as hospitals in which welfare recipients frequently find jobs. ERT is the three-month change in the ratio plotted in figure 4.

Family size variables. Family size affects the likelihood of job leaving public assistant in three ways. First, the income and earnings cutoffs for eligibility increase with family size. As a result, earnings which might lead to loss of eligibility for a small family will not necessarily do so if the family is large. Second, the value of a mother's time in the home increases with family size, especially when small children are present. Third, the greater the number of children present in a family the more valuable will be the Medi-Cal benefits associated with public assistance. While families not on welfare can qualify for Medi-Cal assistance, it is my impression that this is not clearly understood among recipients. Also, as income increases the amount contributed by the program to meet medical expenses declines. Both the value of Medi-Cal and of a mother's time in the home are probably exceptionally increased by the presence of children in the pre-Kindergarten age. As a result I have included variables for both the number of children in the family and the number in the younger age group.

Personal characteristics variables. The analysis for the FG models focusses on the mother in such cases and that for the U population concentrates on the fathers. In each instance variables are included to identify the race, age, education, and the presence of physical disabilities of that person. As can be seen in the Appendices, the age and education variables are defined incrementally so that, for example, the coefficient of the 12-year education dummy measures the effect on the probability of change in status of changing from having a high school diploma over having dropped out in the 11th grade.

Work experience variables. Work history of both AFDC-FG mothers and AFDC-U fathers is identified on the basis of time since they last held a job. In addition, an estimated wage variable was developed from earnings regressions estimated using Alameda County data from the user samples for the 1970 census. These regressions are reported in Appendix III. While the regressions fit the cross-section data for the entire county population quite well (the R^2 figures exceed .5 for all race/sex groups) it is not clear how well they will identify expected earnings for persons on welfare. Expected wage variables have exhibited some explanatory power in other work.

Most AFDC-U fathers in Alameda County have some work experience. For them it was possible to include in the models information on prior occupation and reason for termination.

Welfare service variables. In collection of the Alameda County data an attempt was made to collect data on all employment-related services received by members of families in the sample.[17] It was not possible to differentiate among services on the basis of content for this paper. However, I have included variables identifying (a) whether or not the father in an AFDC-U case or the mother in an AFDC-FG case was receiving a service at the beginning of the three observations periods, (b) the number of services completed in the past, and (c) whether or not any of these services were other than those provided by the Work Incentive Program. Services include everything from job counseling to classroom training to on-the-job training but exclude routine referrals to service-supplying agencies or counseling. An attempt is made to differentiate between WIN and non-WIN services because of the insistence of county welfare administrators that training programs they operate outside the WIN framework are superior in general to those provided by WIN.

Family income variables. As discussed above, the presence of nonwage income affected the average welfare "tax rate" on earnings before the California Welfare Reform Act. In addition, the presence of income from other sources seems to certify that a family is not really completely "down and out" when on public assistance. Because in the period before October 1971 modest amounts of outside income did not reduce the size of a family's grant, information on exact amount is often not available.[18] As a result I have limited identification of outside income from sources other than earnings with a dummy variable. An interaction term with AFDC3 is provided to allow for the hypothesized change in effect after the California Welfare Reform Act.

Fragmentation variables. For analysis of the likelihood of desertion for AFDC-U cases I have utilized two additional variables which do not appear elsewhere in the analysis. The first is a set of dummies (MAR1-3) for length of marriage. The second is a set of two dummies to identify the circumstances under which the mother in the family first went on welfare (TYP2 and TYP3). These are described later.

In general I have adopted a parsimonious approach to model specification. With the exception of the OTHINC variable, no interactions have been used, although in some cases there are some theoretical reasons for including them. Capacity limitations of the available computing facilities produced a definite tradeoff between the number of observations and the number of independent variables employed. Given the obvious gains in precision of coefficient estimation from multiplying the number of observations, simplicity in model formulation was adopted to permit exploitation of large samples.

D. The Functional Specification

All the dependent variables described involve a discrete change in state: "on" to "off" welfare, "unemployed to "employed," "in poverty" to "out of poverty," and "together" to "fragmented" for U families. Letting P_i represent the probability that one of these state changes occurs, X_{ij} represent a vector of variables for each observation (j) believed to affect P_i, and α_i a vector of coefficients of the X_{ij} appropriate to the ith transition, I assume the relation between P_i and X_i has the familiar logistic form

$$P_i = \frac{1}{1+e^{-X_{ij}\alpha_i}} .$$

For each model the coefficient vectors α_i are estimated using maximum likelihood techniques.[19]

E. Sample Restrictions

Certain restrictions were applied to all samples used and are usefully summarized before turning to specifics of the FC and U Analysis.

Fraud. About ten percent of the cases read in the Alameda County Welfare sample involved fraud at one time or another. By fraud I mean any deliberate misrepresentation of family resources of composition made to the welfare agency with intent of receiving greater benefits than the law allows. Most such cases never involved prosecution, but I have excluded them all from the analysis in this paper whether or not the alleged fraudulent activity occurred during the period covered by the sample. I clearly have not accounted for all fraud in making this restriction, but my impression is that much of the remainder is of a trivial nature and will exist under any welfare system.

Quarters included. As discussed above, families in the sample were picked at random from the case rolls and "observed" for the twelve months which began with the month at which the selection occurred. I define the dependent variables on the basis of changes occurring for each family over successive three-month periods. Thus a family on assistance which did not leave contributes four "observations" on the likelihood of leaving welfare. A family which stays on for the five months beginning with the sample date but then leaves because of an increase in earnings contributes one observation with no change and one for which "leaving welfare" occurred. All of the other dependent variables are measured similarly.

This procedure has two important consequences. One is desirable, and the other can lead to serious biases. The first is that by using multiple (up to four) observations per family I was able to increase the effective sample size substantially. As will be indicated below, none of the events analyzed here occur very frequently. This augmentation greatly enchanced the precision with which model coefficients were estimated. The second, less favorable, consequence concerns the possibility of model misspecification. The sample creation process I have applied greatly increases the proportion of observations devoted to "stayers." Those families which leave welfare quickly will contribute only one or two quarters' observations to the total sample, while stayers will contribute four. If the variables included in the model account reasonably well for all systematic factors affecting the likelihood of case closure (or whatever dependent variables is under analysis, then this overrepresentation does not matter. The variables that account for it--lack of education, age, etc.,--are in the model. If, however, "staying" is due to factors unaccounted for by the independent variables included in the X vector, then the logit estimation procedure will yield estimates of transition probability which are biased downward. This is but another manifestation of the familiar "mover-stayer" problem in analysis of Markov processes.[20]

I do not feel this bias is particularly significant. I make this judgment on the basis of a simple test. If the passage of time tends to sort welfare recipients between "stayers" and "movers," then the fact that an "observation" for, for example, leaving welfare was drawn from the *fourth* quarter of the year following the sample month for a welfare family instead of the first should provide information on the likelihood fo their leaving welfare over and above the information given by the independent variables in the model. I tested this proposition regularly by including with the variables described below as an independent variable the quarter number of the observation. In no case did the coefficient of "quarter" prove significant. In a similar spirit I also included a variable for total time on welfare and this, too, failed to even approach statistical significance. I conclude that the approximation of welfare state changes as a first-order Markov process is acceptable. Interestingly, "quarter" and "time on welfare" are estimated to have statistically significant coefficients in models which include less than the set of variables used below. This suggests that lack of information on these variables explains the important role of duration of dependence in explaining transitions in other models of the process.[21]

Since the FG sample was larger than the U sample to begin with, I employed as data observations for each of the first three quarters of the sample year for each family in which the family unit satisfied the restrictions set out in sections V and VI below. For the U sample *four* quarters of data were employed per sample case when available.

V. AFDC-FG

In this section I discuss the results of the analysis of the AFDC-FG sample. I begin with the additional sample restrictions applied. This is followed by analysis of factors related to movement off welfare by the restricted definition adopted in the previous definition, analysis of movements using the OFFPOV dependent variables, and finally analysis of factors related to movements by AFDC-FG mothers into jobs.

A. Additional Sample Restrictions

In addition to the fraud restriction cited above the data from the FG sample for the multivariate analysis which follows is limited to three-month periods from the sample year which the family (a) begins on welfare, (b) begins without a man in the house. The latter restriction eliminated all AFDC-FG families with stepfathers or disabled males present.

As a result of the fraud, female present, and man-in-the-house restrictions, the basic FG sample was reduced from 1,708 to 1,346. Use of three quarters of observations increased the total size of 3,727. For the analysis of movements out of poverty in subsection C below, this sample was reduced to 3,516 by exclusion of those families which had sufficient income of their own to satisfy the Orshansky poverty criterion at the beginning of each of the quarters in which they were observed on welfare.[22] For analysis of job-taking, the sample was restricted to those observations on three month periods which commenced with the mother not working. The sample size in this case was 3,080.

More information on these households was available than could be incorporated into the models given computational constraints. My procedure in both the FG and U analysis was to first estimate a basic model which included the key administrative procedures dummies, the children variables, the variables for age, education, disability, and job experience of the mother (or, for the U cases, the father), the dummy terms for presence of outside income, and a single unemployment rate. Then sets of additional variables were sequentially added to this model. Those significantly improving the power of the model (judged on the basis of a X^2 test) were retained. The most important of the "additional variables" from the standpoint of policy are those identifying receipt of employment-related services.

For tests of statistical significance in the material that follows

I have adopted a 90 percent confidence criterion. In most cases the necesary statistics are provided for more or less exacting tests by the reader. Where not included I will be glad to provide them on request.

B. Movements Off Welfare

The results of estimation of coefficients for the logit model (1) using the OFFAID dependent variable are dramatic: adoption of the $30 and 1/3 income disregards policy clearly reduced the likelihood that families would leave welfare, and the shift in computation procedures associated with the California Welfare Reform Act significantly increased it. The basic model on which these conclusions are based is model 1 in table 2. Recall that variable definitions for all AFDC-FG logit models are summarized in Appendix I.

The Models. All of the variables included in model 1 are part of the basic model for the program as defined earlier. None of the following sets of variables, when added to this model, improved its explanatory power: (a) the additional employment environment variables ERT and UP2, (b) the "background variables" MSOUTH and MFOR, (c) the employment services variables, and (d) the estimated earnings variable EARN. Model 3 in table 2 is model 1 re-estimated with the employment service variable MES2, which identifies whether or not the mother has ever completed an employment-related welfare service of any type. This result is reported for contrast with results cited for the job accession analysis undertaken later.

The administrative variables. As discussed earlier, the shift in computation procedures represented by AFDC1 and AFDC2 both served to extend the earnings cutoff for welfare eligibility. As a result, nonzero values for these dummies are expected to reduce the likelihood of termination.

Table 2

AFDC-FC TERMINATION MODELS
(Numbers in Parentheses are t-Statistics)

	Mean	Model		
		1	2	3
Dependent Variable		OFFAID	TERMINATION	OFFAID
Independent Variables:				
Administrative Procedures				
AFDC1	.24	-.2876 (-1.131)	-.3742 (-1.718)	-.2867 (-1.125)
AFDC2	.28	-.8638 (-2.740)	-.5883 (-2.304)	-.8649 (2.744)
AFDC3	.25	-.0347 (-.1126)	.0462 (.1780)	-.0349 (-.1133)
Labor Market Conditions				
UL1	4.8	-.1963 (-1.167)	-.2602 (-1.849)	-.1983 (-1.178)
Mother's Demographic Characteristics				
MAGE1	.93	-.2761 (-.8437)	-.1871 (.6767)	-.2778 (-.8485)
MAGE2	.65	-.0290 (-.1302)	-.0487 (-.2512)	-.0323 (0.1452)
MAGE3	.32	-.3491 (-1.480)	-.0938 (-.4703)	-.3476 (-1.473)
MED1	.93	-.1767 (-.4441)	-.2652 (-.8315)	-.1655 (-.4149)
MED2	.43	.1461 (.7937)	.0838 (.5361)	.1500 (.8134)
MED3	.092	-.0963 (-.3487)	-.0968 (-.3987)	-.0978 (-.3538)

Table 2 continued:

	Mean	Model 1	Model 2	Model 3
		OFFAID	TERMINATION	OFFAID
Mother's Demographic Characteristics				
BLACK	.58	-.6161 (-3.568)	-.8340 (-5.649)	-.6087 (-3.506)
OTHER	.09	-.2510 (-.8504)	-.4006 (-1.619)	-.2472 (-.8369)
DISAB	.16	-.3209 (-1.153)	-.2758 (-1.216)	-.3262 (-1.171)
Family Size				
CHILD	2.6	-.2135 (-3.217)	-.2552 (-4.396)	-.2139 (-3.222)
YNGCHLD	.76	.0545 (.4070)	.1065 (.9275)	.0529 (.3945)
Family Income and Work Experience				
JOBC	.17	.8385 (3.348)	.4839 (2.322)	.8510 (3.374)
JOBY	.21	.6208 (2.661)	.3168 (1.658)	.6275 (2.682)
JOBY2	.25	.5345 (2.239)	.1922 (.9788)	.5405 (2.260)
OTHINC	.18	.4322 (1.736)	.4917 (2.403)	.4281 (1.719)
OTHINCP	.052	.6161 (1.1588)	.2070 (.5989)	.6158 (1.587)
Employment-Related Services				
MES2	.12			-.1074 (-.4240)
CONSTANT		-1.141 (-1.228)	-.1159 (-.1503)	-1.133 (-1.220)
No. of observations		3727	3727	3727
No. of terminations		167	237	167

While the coefficient of AFDC1 has the expected sign, its large standard error prevents conclusive rejection of the hypothesis that the shift had no effect on termination likelihood when the appropriate one-tailed test is applied. This is not true for AFDC2. Here it is clear that the likelihood of case closure was reduced.

For measurement of the effect of the CWRA the appropriate test is not whether or not the coefficient of AFDC3 is significantly different from zero--it is not--but whether it is significantly larger than that of AFDC2. After October 1971 did a significant increase occur in the probability, *ceteris paribus*, that a case in the AFDC-FG program would close? AFDC3 is significantly larger than AFDC2. The "t-statistic" for the difference is approximately 3.

What does this mean? At the point of mean values for all variables in the model the estimated probability of case closure is .034. This corresponds to a mean duration of time until loss of dependence of over seven years in the absence of any intervening event such as death or loss of qualifying children. The probability of case closure calculated at mean values for everything but the administrative variables and with AFDC2 set equal to one is estimated to be about .02. Setting AFDC2 to zero and AFDC3 to 1 changes this to about .05 and lowers expected duration by about one-half-from slightly over 8 to slightly under 4 years. These duration figures must be treated with caution. They are conditional on the nonoccurrence of the variety of demographic events that would cause the case to close but which are not included in the definition of movement off aid used in calculation of this logit.

Other variables. The unemployment rate has the expected sign but is not statistically significant using the appropriate one tailed test. The age and education variables for the mother all have large standard errors, and exclusion of each set individually does not significantly constrain the equation. Race is a critical factor in determining the duration of welfare dependence. Calculated at the point of mean values for all other variables, the switch from white (the excluded group) to black lowers the probability that a case will terminate over a three month period from 6 to 3 percent.

The family size variables have two effects. As discussed above, one is to increase the "need" of the family and the maximum amount of outside income or earnings the mother can have and retain eligibility. In addition, large families increase the value of a mother's home time and the importance of transfers associated with welfare, such as Medi-Cal. For all these reasons terminations can be expected to decline in frequency as family size increases. The value of time and medical benefits are probably greater when children are young. Model 1 indicates that termination likelihood does decline with family size. Again, calculated at the point of mean values, an increase of one child in FBU size lowers the likelihood of case termination by .006. Surprisingly, the effect seems to be solely related to the number of children and not to the presence of very young children in the family.

The importance of work experience. This model and virtually all the ones which follow underscore the importance of past work experience in predicting whether or not cases on welfare will close. Below I have calculated the effect on the probability of case closure over the three-month horizon of four different assumptions about employment history, again assuming all other variables take on their mean values.

Employment Background	Probability of Closure
None	.023
Held job more than a year before initial month of observation	.038
Held job less than a year before initial month of observation	.051

These results provide some support for the "gradualist" model of welfare withdrawal: Those who have jobs and have as a result reduced dependence of public assistance are more likely to be on their way out.

Finally, the presence of income from sources other than earnings increases the likelihood of case closure throughout the sample period. The change in coefficient of this term after the CWRA is large but imprecisely estimated.

Model 2. Model 2 in table 2 is a re-estimation of model 1 with any departure from welfare counted as a transition. This increases the number of status changes counted by 42 percent. The change does not have as significant an effect on one's impression of what is happening on welfare as had been my a priori expectation. The estimated effect of the CWRA is reduced but remains significant; that of the unemployment rate is increased. The consequences of shifting to analysis of movements out of poverty is much more significant, as I describe next.

C. Movements Out of Poverty

The shift from analysis of movements out of dependence to movements out of poverty produces two important results. These are (a) changes in payments calculations procedures of the type experienced in California in 1971 which do not adversely affect the likelihood of movements out of poverty, and (b) services may make a differences. The results of the "OFFPOV" model are reported in table 3.

Recall that for estimation of the logit coefficients for the off poverty model the sample was restricted to observations on changes in status over three month periods for households with initial earnings and other income from nonwelfare sources which amounted to less than the Orshansky poverty standard. The poverty standard is related to family size (and as a result the coefficient of CHILD is large and negative in the OFFPOV model), but it is invariant with respect to earnings treatment procedures. If the work incentive grant calculation procedures introduced after June, 1968 raise the likelihood that families will develop their own resources, the administrative variables should have significant positive coefficients in the OFFPOV model.

They do not. The administrative terms AFDC1 and AFDC3 in model 4 are not individually or jointly significantly different from zero. The AFDC2 term actually has a statistically significant *negative* coefficient.

Interestingly, while most other results concerning variable significance carried over from the OFFAID model to the OFFPOV model, there was some indication in the OFFAID model that employment-related services make some difference: MES2 has a statistically significant positive effect on

Table 3

AFDC-FG POVERTY STATUS AND LABOR FORCE STATUS MODELS
(Number in Parentheses are t-Statistics)

	Means		Models		
			4	5	6
Dependent Variable	OFFPOV	EMPLOY	OFFPOV	EMPLOY	EMPLOY
Independent Variables					
Administrative Procedures					
AFDC1	.25	.24	-.1910 (-.8309)	.3312 (1.264)	.3125 (1.190)
AFDC2	.27	.27	-.4488 (-1.688)	-.4291 (-1.319)	-.4783 (-1.456)
AFDC3	.24	.25	.0278 (.1016)	-.1085 (-.3408)	-.1166 (-.3652)
Labor Market Conditions					
UL1	4.8	4.8	-.0963 (-.6559)	.3280 (1.945)	.3206 (1.894)
ERT		.0014		13.51 (1.371)	13.84 (1.398)
Mother's Demographic Characteristics					
MAGE1	.93	.93	.1369 (.4343)	-.2255 (-.6681)	-.2577 (-.7607)
MAGE2	.64	.62	-.1942 (-.9688)	.0047 (.0203)	.0004 (.0019)
MAGE3	.33	.31	-.3289 (-1.592)	.0097 (.0430)	.0132 (.0583)
MED1	.93	.93	.0592 (.1587)	-.2992 (-.8477)	-.3006 (-.8509)
MED2	.41	.40	.0788 (.4893)	.1494 (.8075)	.1448 (.7814)
MED3	.084	.074	-.2204 (-.8549)	.0549 (.1911)	.0683 (.2370)
BLACK	.58	.57	-.4825 (-3.138)	-.2204 (-1.244)	-.2162 (-1.219)

Table 3 continued:

	Means		Models		
			4	5	6
Dependent Variable	OFFPOV	EMPLOY	OFFPOV	EMPLOY	EMPLOY
OTHER	.098	.10	-.4444 (-1.571)	-.2901 (-.9082)	-.2711 (-.8473)
DISAB	.17	.17	-.3668 (-1.491)	-.4768 (-1.779)	-.5009 (-1.861)
Family Size					
CHILD	2.7	2.7	-.1863 (-3.282)	-.1026 (-1.777)	-.1101 (-1.900)
YNGCHLD	.77	.81	-.0953 (-.7934)	-.2665 (-1.908)	-.2754 (-1.975)
Family Income and Work Experience					
JOBC	.13		1.305 (5.868)		
JOBY	.22	.26	.7685 (3.774)	1.100 (5.315)	1.106 (5.323)
JOBY2	.26	.30	.4469 (2.060)	.5329 (2.345)	.5464 (2.396)
OTHINC	.18	.18	.3532 (1.575)	.5608 (2.447)	.5781 (2.514)
OTHINCP	.052	.053	.4945 (1.365)	-.8583 (-1.795)	-.8746 (-1.828)
Employment-Related Services					
MES1		.028			-.1417 (-.3129)
MES2	.11	.10	.3311 (1.667)	.8868 (4.352)	1.476 (2.982)
MES3		.020			.5306 (1.275)
NWES		.09			-.7959 (-1.537)
CONSTANT			-1.937 (-2.316)	-4.092 (-4.474)	-3.987 (-4.347)
No. of observations			3516	3080	3080
No. with dependent variable = 1			218	169	169

the likelihood of termination. The difference gween this result and that of model 3 suggests that the effect of employment related services on household behavior may be masked in a model determining the likelihood of case termination which includes current job status as an independent variables. While employment services increase the likelihood of taking a job in any quarter, the process of leaving dependence apparently takes longer--people "work their way off." Once the job is obtained there is little additional effect of the employment service as the small coefficient of MES2 in OFFAID model 3 indicates. But for people without jobs such services increase the likelihood that they will obtain them and move out of poverty while staying on welfare. The disregard of earnings associated with the work incentive provisions of welfare regulations permit this. Model 1 also indicates that people with jobs are more likely to leave dependence. Use of assumption of employment (EMPLOY) as a dependent variablesprovides some support for this explanation.

D. Job Taking

Models 5 and 6 in table 3 are the logit estimation results when the dependent variable identifies a move from unemployment to employment by the head of the AFDC-FG household. Model 5 is identical in structure to preceding models 5 and 3. Model 6 includes the full set of service variables. At least six important observations can be made from the results of model 6.

1. While the effect of employment services provided by the welfare department and the state employment service do not directly

affect the likelihood of case closure, when completed they clearly do affect the likelihood that welfare recipients will take jobs. This in turn increases--substantially--the likelihood that they will leave welfare. No support is provided by model 6 for the contention that non-WIN employment services were superior in this respect to those provided ty the WIN program. In fact, the NWES term has a negative sign and is rather large. The large standard error makes the actual effect uncertain.

2. While it is the total number of children and not the presence of young children that affects the likelihood of case termination--presumably as a result of the effect on the earnings eligibility cutoff--the presence of children less than five substantially lowers the likelihood that a mother on welfare will take a job. Here, again, we see an indirect effect on termination likelihood running from presence of young children to likelihood of employment and from employment to termination.

3. While the racial differential between black and white women in the likelihood of leaving welfare or poverty was substantial, the difference in the likelihood of taking a job is statistically insignificant. Apparently all other things equal, black mothers are as likely to take jobs as are whites, but once a job is found for such mothers employment is less likely than for whites to bring termination of dependence.

4. Disability counts for more in determining likelihood of employment than likelihood of leaving welfare. What this means is that the kind of moderate disability cited by DISAB may interfere with employment but not marriage.

5. The employment conditions variables have a significant impact on likelihood of job taking, but the unemployment rate variable has an unanticipated positive sign. The unemployment effect dominates the employment rate effect; a typical change in the latter would be on the order of .01, while as the mean indicates the unemployment rate averaged 4.8 percent. Most of the explanations which I can come up with for this effect have a curiously ad hoc flavor and the reader will be spared them. The problem is rendered particularly difficult by the switch in sign of the UL1 variable between the OFFAID and LABFOR models and the fact that, as I discuss in the next section, the same thing shows up in the AFDC-U models.

6. Finally, the administrative procedures variables indicate adoption of the "30 and 1/3" disregard policy in 1968, its liberalization in 1970, and the reduction of work incentives in 1971 had no significant effect on the likelihood that recipients in the AFDC-FG program would take employment. The small coefficient of AFDC3 seems particularly important in this regard: despite the work incentive-reducing change in payments calculation and the substantial increase in minimum payments that occurred in 1971, I can detect no reduction in the likelihood that AFDC-FG mothers will take jobs. In fact, mothers appear to have been more likely to take jobs after this point than before.

V. AFDC-U

Summarized, the result to analysis of welfare discontinuance among families on AFDC-U is that the reduction in hours rule for AFDC-U eligibility apparently lowered the probability that AFDC-U fathers take jobs and of case closure. As before, I shall review first the special restrictions imposed upon the U sample for use here, then discuss the results of analysis of welfare discontinuance among families in the sample and analysis of likelihood of job-taking. The section is concluded with a brief excursion into development of a model for predicting family fragmentation.

A. Additional Sample Restrictions

For multivariate analysis the basic U sample was restricted to cases with both mother and father present. By definition, families without this combination don't belong in the U program, but because of inertia and departmental policy our sample picked up some families without both parents.[23]

The major difficulty in formulation of the termination model for families in the U program arises because about seven percent of the observation quarters drawn from the sample end in desertion of the father from the case. I have dealt with this problem in a two-stage procedure. Conceptually, what I do is to first construct and estimate a model of family fragmentation. In the second stage I analyze the likelihood of case termination and job-taking by the father given that fragmentation does not occur.

Empirically the analysis is carried out in reverse order. The reason for this is that I suspect that families fall apart because of incompatibility between husband and wife and the exacerbating influence of economic conditions. The "economic conditions" are largely those that relate to the likelihood that the family will leave welfare should it stay together. Thus I discuss first variables in the termination and job-taking models and then the additional factors that possibly are related to fragmentation.

Since terminations proved much more frequent in the U programs than was the case for FG, I was able to use wherever possible up to four quarters of information per family. This produced a sample size of 3,078 for the OFFAID logits. For analysis of job-taking, the sample was constrained to observations begun with the father out of the labor force and not ending with his desertion: this produced 2,551 observations. Analysis of fragmentation was done using 3,296 observations. No analysis of movements out of poverty was conducted, because with the hours restriction imposed on AFDC-U eligibility it seemed no longer reasonable to assume that families leaving assistance had necessarily crossed the poverty threshhold.

B. Leaving Dependence

The results of estimation of the basic OFFAID model for the AFDC-U sample are presented as model 1 in table 5. Model 2 is model 1 plus a single employment services variable. Re-estimation of these models and counting all departures from welfare as terminations had little effect on the results. This is not surprising; for the U sample 86 percent of all closures were classified as genuine terminations of dependence. Here, as in the OFFAID model for the AFDC-FG sample, neither employment services or the unemployment rate at the end of the three-month period, UP2, had a significant effect on the likelihood of case closure, and the terms were dropped from the model. The expected wage variable calculated on the basis of the regressions in Appendix III also added no explanatory power to the model. For the U model location of birth proved to be a significant factor in predicting terminations, and FFOR and FSOUTH were retained.

I enjoyed something of an embarrassment of riches with the U models; it proved impossible to simultaneously include variables for occupational background and reason for termination of the most recent job without exceeding the capacity of available computing facilities. As a result I added the two sets of variables sequentially. Classification of occupational variables seemed to have little explanatory power except for the category "operatives," as anticipated. As a result, this variable was retained, the education and age specifications were reduced to produce room for additional variables, and the job termination reason variables were added. The result is model 3 in table 5. This model is the one I shall discuss.

The most important conclusion to be drawn from model 3 is that the administrative changes that have occurred since 1968 have steadily reduced the probability of termination for AFDC-U cases. As mentioned earlier, the AFDC2 variable identifies approximately the point at which the hours definition was reduced to 152, and the AFDC3 variables represents the point at which the hours definition was lowered to 100. Unlike the case for the FG program, the changes brought about by the California Welfare Reform Program did not significantly alter the likelihood that AFDC-U cases would close. I take the difference in effects between programs to be the result of the simultaneous tightening of the U definition.

Table 5

AFDC-U TERMINATION MODELS

(Numbers in parentheses are t-statistics)

	Mean	Model		
		1	2	3
Dependent Variable		OFFAID	OFFAID	OFFAID
Independent Variables:				
Administrative Procedures				
AFDC1	.24	-.2970 (-1.74)	.2876 (-1.68)	-.3051 (-1.77)
AFDC2	.29	-.5209 (-2.63)	-.5167 (-2.61)	-.6597 (-3.22)
AFDC3	.26	-.5602 (-2.71)	-.5424 (-2.60)	-.5820 (-2.77)
Labor Market Conditions				
UL1	4.8	.0657 (.60)	.0659 (.61)	.1015 (.91)
ERT	.0015	20.49 (3.29)	20.52 (3.29)	20.92 (3.29)
Father's Demographic Characteristics				
FAGE1	.96	.0062 (.02)	.0042 (.0159)	
FAGE2	.69	.2124 (1.49)	.2123 (1.49)	.1488 (1.06)
FAGE3	.36	-.4981 (-3.39)	-.4981 (-3.39)	-.4801 (-3.24)
FED1	.86	.0007 (-.00)	.0004 (.00)	
FED2	.39	.2598 (2.03)	.2623 (2.04)	.2707 (2.39)

Table 5 continued:

	Mean	Model		
		1	2	3
		OFFAID	OFFAID	OFFAID
FED3	.13	-.0403 (-.23)	-.0496 (-.28)	
BLACK	.44	-.6871 (-5.02)	-.6830 (-4.98)	-.6347 (-4.76)
OTHER	.19	-.0788 (-.48)	-.0758 (-.46)	
DISAB	.21	-.6509 (-4.10)	-.6505 (-4.10)	-.5500 (-3.38)
FSOUTH	.34	.2357 (1.70)	.2353 (1.69)	.2209 (1.58)
FFDR	.07	.5990 (2.78)	.5983 (2.78)	.5139 (2.68)
Family Size				
CHILD	3.0	-.0460 (-1.36)	-.0458 (-1.35)	-.0385 (-1.13)
YNGCHLD	1.2	-.1198 (-1.87)	-.1182 (-1.84)	-.1204 (-1.85)
Family Income and Work Experience				
JOBC	.17	.9085 (2.39)	.9058 (2.38)	.9165 (2.18)
JOBY	.51	.6846 (1.86)	.6765 (1.83)	.7265 (1.90)
JOBY2	.28	.0709 (.18)	.0703 (.18)	.0925 (.23)
OTHINC	.16	.8954 (6.23)	.8878 (6.15)	.7630 (5.10)
OTHINCP	.04	-.3944 (-1.28)	-.3953 (-1.29)	-.2793 (-.90)
Employment Related Services				
FES1				
FES2	.28		-.0760 (-.62)	

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Table 5 continued:

	Mean	Model		
		1	2	3
		OFFAID	OFFAID	OFFAID
FES3				
NWES				
Reason for Termination and Operative				
OPER	.17			.3722 (2.86)
NOWRK	.07			.1460 (.52)
FIRED	.08			-.3800 (-1.68)
QUIT	.10			-.1529 (-.77)
STRIKE	.01			2.356 (5.41)
HEALTH	.09			-.3511 (-1.52)
MISCRT	.17			-.1158 (-.69)
CONSTANT	1.0	-1.995 (-3.03)	-1.980 (-3.01)	-2.196 (-3.35)
No. of observations		3,078	3,078	3,078
No. with dependent variable = 1		471	471	471

In the U models the estimated coefficient for the unemployment rate has the wrong sign even in the OFFAID equation, but it is statistically insignificant. Also unlike the FG results, the employment rate change variable, ERT, is significantly related to the likelihood that cases on assistance will leave. For the U models personal characteristics of the father had greater importance than was the case for mothers on FG; apparently having a high school diploma significantly increases closure, while a case with a father over 35 is significantly less likely to close, *ceteris paribus*, the case with a younger head. Being black here also makes a difference: at the point of mean values for other variables the shift from "white" to "black" lowers the likelihood of case closure from .16 to .09. The estimated probability of closure at the point of mean values for all variables is .13.

Location of birth seemed to have some explanatory power for likelihood of case closure. Families headed by men born in the South or abroad are more likely to leave welfare once on than are families headed by men born in, for example, California. Partial disability reduces the likelihood of case closure. The disabilities marked by DISAB cannot be very significant; if they were, the case would be classed as "FG."

Paradoxically the number of children in the family does not seem to be significantly related to case closure for U cases. This appears to be evidence in support of the idea that it is the hours rule, not the gross earnings cutoff, that makes the greatest difference for likelihood of welfare termination for these families. The coefficient of YNGCHLD is significant but small; here again my impression from talking with people in the welfare department is that it is possible that the Medi-Cal benefits are especially important for families with small children.

For men on AFDC-U length of time since the most recent employment tells a great deal about likelihood of termination. These results indicate that if a man has not held a job within a year, his chances of leaving welfare are not significantly different from those of a man who has no significant work history at all. As was the case for AFDC-FG, a family headed by a person in the labor force, even though currently on welfare, has a high probability of leaving dependence. At the point of means changing from a father with no work in the past year to one who is currently working alters the estimated probability of case closure over three months from .08 to .17.

As indicated by the variable for operatives, all other things equal and family headed by a man who has been a canner or other operative is significantly more likely to terminate than is a family headed by a man with any other profession.

The reason for most recent termination variables provide slightly more information concerning likelihood of termination than did those identifying the actual nature of the job. The excluded group for this classification is made up of workers "laid off;" persons currently working are counted in the JOBC classification. Without prior specification (permitting a one-tailed test) most of these variables do not have statistically significant coefficient. A priori prediction on the basis of reading cases would have been that men fired have trouble finding new jobs and that men citing health problems as reasons for quits do also; this is born out somewhat by the coefficients of the corresponding variables. The one sure bet at the Alameda County Welfare Department is that if a case is headed by a man on strike it will soon close. At the point of means shifting from "laid off" to "strike" and assuming both workers have had a job within the year raises the probability of case closure within three months from about 10 to 60 percent. Refugees from several strikes were picked up in the sample, but the major group were provided by the United Autoworkers during the General Motors strike of 1970.

For the AFDC-U sample the presence of other income also raised the likelihood of case closure. Here there is no significant post-CWRA effect.

C. Taking Jobs

For the two models in table 6 the change of state analyzed is taking a job. Again, both job accessions that bring about departure from welfare and those which allow the family to remain on assistance are counted as changes of state. Not surprisingly, the results for this are not much different from those for the OFFAID model, since for this group the two are much more closely connected than is the case for the FG population. I shall concentrate only on those conclusions that differ between the two models or that can be more sharply drawn on the basis of these results.

For taking jobs the EMPLOY equation again indicates that the process of tightening of the hours rule for AFDC-U eligibility seems to have substantially reduced the likelihood of case closure. For this dependent variable the coefficient of AFDC3 is smaller than that for AFDC2, although in model 2 the difference barely misses statistical significance. Model 2, which includes the variables identifying reason for

Table 6

AFDC-U EMPLOYMENT MODELS
(Numbers in parentheses are t-statistics)

	Mean	Model 1	Model 2
Dependent Variable		EMPLOY	EMPLOY
Independent Variables:			
Administrative Procedures			
AFDC1	.24	-.1235 (-.72)	-.1282 (-.74)
AFDC2	.29	-.3770 (-1.86)	-.5035 (-2.40)
AFDC3	.26	-.5835 (-2.62)	-.5886 (-2.60)
Labor Market Conditions			
UL1	4.8	.000 (.00)	.0399 (.34)
ERT	.0014	19.25 (3.09)	19.50 (3.07)
Father's Demographic Characteristics			
FAGE1	.96	.0874 (.31)	
FAGE2	.68	.1461 (1.00)	
FAGE3	.35	-.5343 (-3.53)	-.4941 (-3.37)
FED1	.87	-.0456 (-.25)	
FED2	.40	.0703 (.53)	.0783 (.66)
FED3	.12	.0053 (.03)	

Table 6 continued:

	Mean	Model 1	 2
		EMPLOY	EMPLOY
BLACK	.43	-.1877 (-1.36)	-.1689 (-1.20)
OTHER	.19	.0652 (.39)	.0784 (.46)
DISAB	.21	-.3977 (-2.63)	-.2541 (-1.62)
FSOUTH	.34	.0496 (.36)	.0531 (.38)
FFOR	.06	.7766 (3.33)	.7108 (3.03)
Family Size			
CHILD	2.9	.0247 (.74)	.0390 (1.20)
YNGCHLD	1.2	-.2174 (-3.33)	-.2269 (-3.45)
Family Income and Work Experience			
JOBY	.62	.2097 (.70)	.1767 (.54)
JOBY2	.34	-.2149 (-.69)	-.1963 (-.61)
OTHINC	.17	.7177 (4.86)	.5516 (3.58)
OTHINCP	.04	-.2789 (-.85)	-.1758 (-.53)
Employment-Related Services			
FES1	.10	.2511 (1.44)	.2907 (1.66)
FES2	.28	-.2467 (-1.07)	-.2297 (-.99)

- -

Table 6 continued:

	Mean	Model 1	Model 2
		EMPLOY	EMPLOY
FES3	.10	.2894 (1.37)	.3116 (1.47)
NWES	.18	.4981 (2.10)	.4865 (2.03)
Reason for Termination and Operative			
OPER	.18		-.0216 (-.15)
NOWRK	.09		-.2447 (-.96)
FIRED	.09		-.5563 (-2.61)
QUIT	.11		-.4732 (-2.48)
STRIKE	.01		2.217 (5.12)
HEALTH	.11		-.5148 (-2.45)
MISCRT	.20		-.2700 (-1.70)
CONSTANT	1	-1.318 (-2.07)	-1.19 (-1.91)
No. of observations		2,551	2,551
No. with dependent variable = 1		456	456

termination from most recent job, shows much less effect on the likelihood of termination of the move from AFDC2 to AFDC3 than does model 1. I suspect this difference occurs because of the General Motors strike during the AFDC2 period. This strike was relatively shortlived.

Again, in both EMPLOY models the coefficient of the unemployment variable is not statistically significant, but that of the employment rate change variable is. Having a high school diploma, while seen above to affect the likelihood that AFDC-U cases will close, does not seem to significantly affect the likelihood that a man without a job will take one. This perhaps indicates that education primarily affects wage and not propensity to work. The same effect may be operating in connection with the BLACK variable. Again, the effect of race on likelihood of job-taking is not significant, while race was extremely important in predicting case closure. Similarly, having been an operative does not significantly enhance the likelihood that a man will get a job, but apparently once one is obtained, it is certain to pay well enough to bring about welfare termination.

Perhaps the most interesting difference between the OFFAID and LABFOR logits occurs in the "reasons for termination" category. Closures involving a firing, quiting, citation of health problems, and even the "miscellaneous" category,are all significantly inversely related to the likelihood of taking up a job. Apparently such men are significantly less likely to take up even part-time work than are those who are laid off.

Here, as in the employment models for the AFDC-FG population, employment services have a significant effect on the likelihood of job-taking by recipients. However, the pattern is much different in the U models than was the case for FG. Judging from the pattern of coefficients, it is principally *current* enrollment in an employment service that counts. Those services completed in the past which did not lead to immediate employment have little effect on the likelihood of job finding in the future. Those recipients who received employment services outside the WIN program are an exception. For them such services, once completed, made an important difference in the likelihood of case termination. Thus while WIN seems to have helped the employment potential of AFDC-FG mothers, these estimates indicate that the county on its own was doing a better job for AFDC-U fathers.

The qualitative difference in these services and reasons for the WIN-non-WIN differential are analyzed in a forthcoming dissertation by Gerald Silverman.[24] Until the full story on those services can be developed, firm conclusions are inappropriate. One point, however, seems clear: For proper analysis of the impact of services on dependency, it is imperitive that the sequence of changes that lead to family independence be disaggregated. In particular, one should distinguish between the move to employment and the move from welfare.

D. Staying Together

Over six percent of fathers in Alameda County AFDC-U cases at any point in time will desert their family within three months. Some return; many do not. There is some (largely anecdotal) evidence that a share of these separations take place to avoid the hours of employment rule for AFDC-U eligibility. For example, a father may leave his family to take a relatively short-run job that would, if he did not "leave," cause them to lose eligiblity. He may actually be living next door.[25] Because it involves fraud, not much is known about this phenomenon. Nonetheless, the numbers are clear: an exceptional amount of family dissolution occurs in AFDC-U. This is paradoxical given the fact that AFDC-U was originally established to avoid the family dissolution incentives thought to be created by denial of assistance to two-parent families.

In table 7 I report the results of a logit equation in which likelihood of family fragmentation is the dependent variable. As might be expected, such changes are difficult to predict. Some interesting relationships do appear, however. I discuss the variables in the order they appear in the table.

Administrative procedures for benefit calculation and determination of U eligibility do not significantly affect the likelihood of fragmentation. The same is true of the unemployment rate. However, these results indicate that when employment in Alameda County is increasing the fragmentation rate on AFDC-U actually goes up, not down. This is consistent with the father-leaves-the-family-for-a-job story mentioned above. But I am anxious to emphasize that this hypothesis is very tentative. Further study of households which fragment during an employment upswing should reduce the uncertainty.

The fragmentation model was estimated using the largest sample in the study, and this constrained the number of independent variables that could be employed. I reduced the age and education specification on the

Table 7

AFDC-U FRAGMENTATION MODEL

The Dependent Variable is FRAG

	MEAN	COEFFICIENT	t-STATISTIC
Independent Variables:			
Administrative Procedures			
AFDC1	.24	-.2632	-1.09
AFDC2	.29	-.2772	-1.02
AFDC3	.26	-.2539	- .94
Labor Market Conditions			
UL1	4.8	.0565	.38
ERT	.0015	13.96	1.64
Father's Demographic Characteristics			
FAGE2	.69	-.3458	-1.69
FAGE3	.36	-.5076	-2.03
FED3	.13	-.4083	-1.68
BLACK	.44	.1726	1.00
OTHER	.18	-.3699	-1.44
DISAB	.20	-.1806	- .83
FSOUTH	.33	-.2642	-1.39
FFOR	.07	.3317	.88
Length of Marriage			
MAR1	.85	.1380	.67
MAR2	.50	-.1611	- .70
MAR3	.30	-.5754	-1.94
Pregnancy			
PREG	.11	-.6440	-2.49
PREPREG	.49	.0890	.56

Table 7 continued:

	MEAN	COEFFICIENT	t-STATISTIC
Mother's Status at Case Opening			
TYP2	.12	.2149	.92
TYP3	.55	-.2042	-1.06
Other Income			
OTHINC	.16	-.8181	-2.41
OTHINCP	.04	-.1833	- .26
CONSTANT	1.0	-2.021	-2.79

No. of observations	3296
No. with dependent variable = 1.0	218

basis of one preliminary run in which only these variables and those for administrative procedures and labor market conditions were included. The results in the table are similar to those in the preliminary trial: families with older fathers and those with fathers who have some education beyond the high school level are, other things equal, less likely to fragment. Beyond this, the only factors that are certain to reduce likelihood of termination are more than 15 years of marriage, pregnancy, and other income.

In addition to the effects I have singled out, there is considerable material for further investigation or speculation here. I detect no "shotgun" effect; marriages which occurred at the time of or following first pregnancy are no less secure than those which occurred before. Families in which the mother went on welfare as a result of the birth of her first child do not appear more likely to fragment than are those in which the mother came on at some later point in her life. I suspect a sociologist could devise stories to explain the sizable negative coefficient on the FSOUTH variable.

The principal conclusion of this foray into family fragmentation is that such changes are not entirely random events. It is possible that further research here can clarify the relationship between family dissolution and the labor market, since this seems particularly significant. It is possible that these desertions are a product of the "hours" rule for AFDC-U eligibility and would diminish if only a needs criterion were employed. However, even if such a change took place, incentives would still be present for family dissolution, since such behavior would allow combination of two incomes.

VI. Summary

Since I have summarized most points at intervals within the body of the paper, I will confine my comments here to a discussion of the major conclusions and then point to one implication for future research.

The most important conclusion produced by this work is that changes in work incentives incorporated in the payments calculation scheme in California have had no observable effect on the likelihood of job-taking by recipients or, for families on AFDC-FG, of leaving poverty. The changes have reduced the likelihood of welfare termination. Three qualifications to this conclusion should be emphasized. First, recipients may not understand the operation of the earnings disregard. If the procedure were explained thoroughly to them, behavior might change. It would be easy to design an experiment in which this hypothesis could be tested. Second, I have shown elsewhere that the county partially offset the effects of the legislated work expenses throughout this period by steadily tightening treatment of work expenses.[26] Behavior of recipients might differ if, say, the system were shifted to a uniform allowence for such costs. Third, comparison of figures 2 and 3 indicates that changes in payments procedures were closely associated in timing with changes in trends in unemployment rates. While I have attempted to control for labor market conditions, my unemployment variable isn't very good, and it is possible that some of these results might change should an indicator more appropriate to the environment faced by the recipients in the sample be devised.

A second conclusion worth re-emphasizing is that employment services, even when measured as crudely as is done here, seem to make a difference.

This effect is detected primarily when attention is shifted from likelihood of welfare termination to likelihood of obtaining a job. To my knowledge mine is the first attempt at this, and further work in this direction should be fruitful.

Finally, I have had trouble identifying the effect on recipients of California's progressive constraint of the restriction placed upon hours of work per month permitted by AFDC-U recipients. The results of the U analysis appear to indicate that this restriction has had disastrous effects for termination probabilities. These effects are not apparent in cross-tabulations in which no control exists for the changing demographic composition of the caseload.[27]

The importance of payments scheme and demographic factors for welfare termination in this paper suggest that analysis of behavior of recipients based on samples drawn from different states may be complicated by the substantial interstate variation in payments calculation procedures. Crude interstate comparisons of welfare turnover are also likely to be hazardous if substantial differences in caseload characteristics exist.

The basic hypothesis on which this paper was based was that something could be learned about changes experienced by families on welfare and factors influencing these changes from looking at case files. Assessment of "proof" is left to the reader.

FOOTNOTES

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[1] But not insignificant. See Albert Rees and Harold W. Watts, "An Overview of the Labor Supply Results," in Joseph A. Pechman and P. Michael Timpane, (eds.), *Work Incentives and Income Guarantees* (Washington: The Brookings Institution, 1975), pp. 60-87.

[2] See Frank Levy, "Probability of AFDC Case Discontinuance by Family Characteristics," prepared by Ketron, Inc., for the Office of Planning and Evaluation, Social and Rehabilitative Services, U.S. Department of Health, Education,and Welfare, August 1973.

[3] See C. Peter Rydell, Thelma Palmiero, Gerard Blais, and Dan Brown, *Welfare Dynamics in New York City*, R-1441-NYC, The New York City Rand Institute, October 1974.

[4] I have described the operation of the AFDC program in California in considerable detail in two separate working papers. See Michael Wiseman and Frederick Doolittle, "The California Welfare Reform Act: A Litigation History," Department of Economics Working Paper No. 71, University of California at Berkeley, July 1976 and Michael Wiseman, "County Welfare: Caseload Growth and Change in Alameda County, California, 1967-73," Department of Economics Working Paper No. 72, University of California at Berkeley, July 1976. Citations for all of the regulation description that follows are in Wiseman and Doolittle.

[5] For an example of a case qualifying for AFDC-U on the basis of a mother's unemployment, see Michael Wiseman, "The Alameda County Welfare Sample: Graphs, Tables, and Stores," Department of Economics Working Paper No. 80, University of California at Berkeley, July 1976, p. 70. This paper is cited hereafter as "Graphs."

[6] The payment schemes are described algebraically in Wiseman, "County Welfare," *op. cit.*, pp. 15-26.

[7] See Wiseman and Doolittle, *op. cit.*, Section III.

[8] Narrative examples of case histories appear in Wiseman, "Graphs," pp. 55-82.

[9] Data collected for cases sampled from the welfare rolls for December 1972 extend to December of the following year.

[10] One of the best examples is Michael J. Boskin and Frederick C. Nold, "A Markov Model of Turnover in Aid to Families with Dependent Children," *The Journal of Human Resources*, 10 (4), pp. 467-481.

[11] Source of the poverty standard was U.S. Bureau of the Census, "Characteristics of the Population Below the Poverty Level: 1974," *Current Population Reports*, Series P-60, No. 102, Table A-2. The poverty index was deflated to March 1970 dollars using the consumer price index.

[12] Wiseman, "County Welfare," *op. cit.*

[13] See Wiseman, "Graphs," p. 31.

[14] Wiseman, "County Welfare."

[15] These numbers are taken from U.S. Department of Labor, *Area Trends in Employment and Unemployment*, various issues.

[16] Joseph C. Ullman, "How Accurate are Estimates of State and Local Unemployment?" *Industrial and Labor Relations Review*, Vol. 16 (April 1963). pp. 434-52.

[17] This was done in part to justify Gerald Silverman's and my contention that service effects on dependency had been improperly assessed in Alameda County by the General Accounting Office. See Michael Wiseman and Gerald Silverman, "Evaluating Social Services: Did the General Accounting Office Help?" *Social Service Review* 48 (3), pp. 315-326.

[18] In "The California Welfare Reform Act" I have argued that official state statistics on outside income are probably biased also by this tendency. See Section IV of that paper.

[19] I used Dan McFadden's QUAIL program on the Lawrence Berkeley Laboratory's CDC 6600-7600 system for this work.

[20] L. A. Goodman, "Statistical Methods for the Mover-Stayer Model," *Journal of the American Statistical Association*, 56 (1961), pp. 841-868.

[21] See Rydell, *et al.*, *Welfare Caseload Dynamics in New York City*, p. xi.

[22] See note 11.

[23] See Wiseman, "County Welfare," p. 52.

[24] Gerald Silverman, *The Other Program: AFDC-U in Alameda County*, forthcoming dissertation. School of Social Welfare, University of California at Berkeley.

[25] Such a case was uncovered by the *Oakland Tribune* and described on the front page of the paper's October 1, 1970 edition.

[26] Wiseman, "County Welfare," section III.

[27] *Ibid.*, section V.

APPENDIX I

AFDC-FG MODELS VARIABLE CATALOG

The sample is made up of pooled observations on status of families in the AFDC-FG caseload in Alameda County, California, at various times between January 1, 1967 and December 31, 1973. Households not satisfying the following restrictions were deleted. The item references are to specific variables used in applying the restrictions as designated in the codebook for the sample.[1] Details of observation definition are given in text.

GENERAL RESTRICTIONS

	Restriction	Source
1.	Families all included mother	Item 2-5 ≠ 0
2.	Families included no man in role of spouse	Item 2-6 ≠ 1, 2
3.	No evidence existed of fraud	Item 1-5 = 0

DEPENDENT VARIABLES

Three dependent variables are employed: (1) off welfare, (2) out of poverty, and (3) employed. Each variable is dichotomous. Use of variables (2) and (3) involved additional sample restrictions. The variable definitions are detailed below.

Dependent Variable	Circumstance for which Dependent Variable = 1 (=0 otherwise)	Source and Criterion	Additional Sample Restrictions
OFFAID	Family no longer dependent at end of quarter	Item 6-9 = 0 and Item 6-11 or 6-12 ≠ 1, 32-39, 52, 77, 79, 81-84, 86-88	None
OFFPOV	Family income minus assistance exceeds poverty standard	Application of Orshansky poverty criterion to family income at end of quarter net of transfers.[2] If OFFAID = 1, OFFPOV = 1	Restricted to families poor (by same criterion) at beginning of quarter

DEPENDENT VARIABLES--Continued

Dependent Variable	Circumstance for which Dependent Variable = 1 (=0 otherwise)	Source and Criterion	Additional Sample Restrictions
EMPLOY	Mother has job at end of quarter	Item 6-32 = 2 and Item 7-14 = 4, and/or OFFAID = 1 and Item 6-11 or 6-12 = 3, 7, 11, or 90	Restricted to families with mothers not holding job at beginning of quarter (Item 3-5 = 4)

INDEPENDENT VARIABLES

The independent variables used in one or more of the estimated models are listed below. Only the hypothesized effect on OFFAID is specifically cited. Expected effects of these factors on EMPLOY and OFFPOV are described in the text.

Variable Name	Definition	Source	Effect on Likelihood of Termination (*ceteris paribus*)
CONS	CONS = 1 for all observations		
	Administrative Procedures Dummies DATE ≡ Sample Month of Observation		
AFDC1	= .33 if DATE = 5/68 = .67 if DATE = 6/68 = 1.0 if $7/68 \leq \text{DATE} < 12/69$ = .67 if DATE = 12/69 = .33 if DATE = 1/70 = 0 otherwise	Items 1-1, 1,2	The coefficients of AFDC1 and AFDC2 are expected to be negative, with that of AFDC2 greater in absolute value than that of AFDC1. The sign of the coefficient of AFDC3 is ambiguous, it will be smaller in absolute size than that of AFDC2 Excluded (reference) period is 1-67 - 6-68.
AFDC2	= .33 if DATE = 12/69 = .67 if DATE = 1/70 = 1.0 if $2/70 \leq \text{DATE} < 8/71$ = .67 if DATE = 8/71 = .33 if DATE = 9/71 = 0 otherwise		
AFDC3	= .33 if DATE = 8/71 = .67 if DATE = 9/71 = 1.0 if $10/71 \leq \text{DATE}$ = 0 otherwise		

INDEPENDENT VARIABLES--Continued

Variable Name	Definition	Source	Effect on Likelihood of Termination
Labor Market Conditions			
UL1	San Francisco-Oakland S.M.S.A. unemployment rate for DATE - 1	State employment service data[3]	Sum of coefficient signs for UL1, UP2 should be negative. Coefficient of UL1 may be positive.
UP2	San Francisco-Oakland S.M.S.A. unemployment rate for DATE + 2		
ERT	Change in Alameda County employment rate in non-governmental employment covered by the unemployment insurance system between DATE + 2 and DATE - 1	State employment service data[4]	Coefficient should be positive
Mother's Demographic Characteristics			
MAGE ≡ Mother's Age at Beginning of Quarter			
MAGE1	= 1 if MAGE $\geq$ 20 = 0 otherwise	Item 2-29, 2-30	Likelihood expected to diminish with age
MAGE2	= 1 if MAGE $\geq$ 26 = 0 otherwise		Excluded group made up of mothers less than 20 years old
MAGE3	= 1 if MAGE $\geq$ 36 = 0 otherwise		
MED ≡ Mother's Years of Education			
MED1	= 1 if MED $\geq$ 8 = 0 otherwise	Item 2-33	Likelihood expected to increase with education
MED2	= 1 if MED $\geq$ 12 = 0 otherwise		Excluded group made up of mothers with less than eight grade education
MED3	= 1 if MED $\geq$ 13		
BLACK	= 1 if mother black = 0 otherwise	Item 2-32	
OTHER	= 1 if mother other nonwhite or Chicana = 0 otherwise		

INDEPENDENT VARIABLES--Continued

Variable Name	Definition	Source	Effect on Likelihood of Termination
MSOUTH	= 1 if mother born in South = 0 otherwise	Item 2-31	Unknown
MFOR	= 1 if mother foreign born = 0 otherwise	Item 2-31	Unknown
DISAB	= 1 if mother disabled - 0 otherwise	Item 3-13	
	Family Size		
CHILD	Number of children in family	Items 2-8, 2-9, 2-10, 2-11, 2-15	Likelihood should decrease as number of children, especially young ones, increases
YNGCHLD	Number of children less than 5	Items 2-8, 2-9	
	Family Income and Work Experience		
MWAGE	Estimated potential weekly earnings of mother	Regressions reported in Appendix III	Likelihood of termination positively related to expected wage
JOBC	= 1 if mother employed at beginning of quarter = 0 otherwise	Items 2-35, 2-37, 2-41, 2-42	Employment experience should increase likelihood of termination
JOBY	= 1 if mother not employed at beginning of quarter but employed within preceding year = 0 otherwise		Excluded group has no employment experience
JOBY2	= 1 if mother not employed at beginning of quarter or in preceding year but has employment experience		
OTHINC	= 1 if family has income from source other than earnings or AFDC = 0 otherwise	Item 5-28	Effect ambiguous
OTHINCP	= OTHINC*ADFG3		

INDEPENDENT VARIABLES--Continued

Variable Name	Definition	Source	Effect on Likelihood of Termination
	Employment-Related Services		
MES1	= 1 if mother receiving employment-related service at time of sample = 0 otherwise	Items 4-30 *et seq*	See text
MES2	= 1 if mother enrolled in and completed employment-related service in past = 0 otherwise		
MES3	= 1 if mother enrolled in and completed ≥ 2 employment-related services in past = 0 otherwise		
NWES	= 1 if mother enrolled in and completed one or more Non-WIN employment-related services in past = 0 otherwise		

FOOTNOTES TO APPENDIX I

[1] R. Booth and M. Wiseman, *Income Dynamics Project County Welfare Sample Variable Location and Codebook* (Berkeley, California: University of California Institute of Business and Economic Research, 1976). I have included references only for the first quarter. For quarters subsequent to the first all variables were updated and the restrictions re-applied.

[2] The poverty cutoff was taken from U.S. Bureau of the Census, "Characteristics of the Population Below the Poverty Level: 1974," *Current Population Reports*, Series P-60, No. 102, Table A-2. The index was converted to constant (March 1970) dollars using the consumer price index.

[3] Data collected from *Area Trends in Employment and Unemployment* (Washington: U.S. Department of Labor Manpower Administration), various issues.

[4] The employment rate variable is the change in the ratio of employment in selected industries to population in the 18-64 year age range for Alameda County over the three-month time span covered by each observation. Employment data were supplied by the California Employment Development Department and cover only industries with workers covered by the unemployment insurance benefit system and which had such coverage throughout the time period covered by this study.

APPENDIX II

AFDC-U MODELS VARIABLE CATALOG

The sample is made up of pooled time-series and cross-section observations on status of families in the AFDC-U caseload in Alameda County at various times between January 1, 1967 and December 31, 1973. Households not satisfying the restrictions below were deleted. The item references in this table are to specific variables used in applying the restrictions as designated in the codebooks for the sample.[1]

GENERAL RESTRICTIONS

	Restriction	Source
1.	Families all include both father and mother	Item (2-5) ≠ 0
2.	No evidence existed of fraud	Item 1-5 = 0

DEPENDENT VARIABLES

Three dependent variables are employed: (1) family fragmented; (2) off welfare, and (3) father employed. Each variable is dichotomous. Use of variables (2) and (3) involved additional sample restrictions. The variable definitions are detailed below. Item references are to the sample codebook.[1]

Dependent Variable	Circumstance for which Dependent Variable = 1 (=0 otherwise)	Source and Criterion	Additional Sample Restrictions
FRAG	Father leaves home during quarter	Item 6-40 = 0, 2, 3	None
OFFAID	Family no longer dependent at end of quarter	Item 6-9 = 0 and Item 6-11 or 6-12 = 1, 32-39, 52, 77, 79, 81-84, 86-88	Family remains together
EMPLOY	Father has job at end of quarter	Item 6-33 = 2 and Item 7-26 = 4	Father not employed at beginning of quarter & family remains together

INDEPENDENT VARIABLES

The independent variables used in one or more of the estimated models are listed below. Only the hypothesized effect on OFFAID is explicitly stated for variables other than those related only to fragmentation. Expected effects of these factors on LABFOR and FRAG are discussed in the text.

Variable Name	Definition	Source	Effect on Likelihood of Termination (*ceteris paribus*)
CONS	CONS = 1 for all observations		
	Administrative Procedures Dummies		
	DATE ≡ Sample Month of Observation		
AFDC1	= .33 if DATE = 5/68 = .67 if DATE = 6.68 = 1.0 if 7/68 ≤ DATE < 12/69 = .67 if DATE = 12.69 = .33 if DATE = 1/71 = 0 otherwise	Items 1-1, 1-2	The coefficients of AFDC1 and AFDC2 are expected to be negative. The sign of the coefficient of AFDC3 is expected to be positive.
AFDC2	= .33 if DATE = 12/69 = .67 if DATE = 1/70 = 1.0 if 2/70 ≤ DATE < 8/71 = .67 if DATE = 8/71 = .33 if DATE 9/71 = 0 otherwise		Excluded (reference) time period is 1-67 - 6-68.
AFDC3	= .33 if DATE = 8/71 = .67 if DATE = 9/71 = 1.0 if DATE ≥ 10/71 = 0 otherwise		

INDEPENDENT VARIABLES--Continued

Variable Name	Definition	Source	Effect on Likelihood of Termination
	Labor Market Conditions		
UL1	San Francisco-Oakland S.M.S.A. unemployment rate for DATE - 1	State employment service data[2]	Sum of coefficient signs for UL1, UP2 should be negative. Coefficient of UL1 may be positive.
UP2	San Francisco-Oakland S.M.S.A. unemployment rate for DATE + 2		
ERT	Change in Alameda County employment rate in non-governmental employment covered by the unemployment insurance system between DATE + 2 and DATE - 1	State employment service	Coefficient should be positive
	Father's Demographic Characteristics		
	FAGE ≡ Father's Age at Beginning of Quarter		
FAGE1	= 1 if FAGE ≥ 20 = 0 otherwise	Items 3-15, 3-16	Likelihood expected to diminish with age Fathers in reference group have FAGE < 20
FAGE2	= 1 if FAGE ≥ 26 = 0 otherwise		
FAGE3	= 1 if FAGE ≥ 36 = 0 otherwise		
	FED ≡ Father's Years of Education		
FED1	= 1 if FED ≥ 8 = 0 otherwise	Item 3-19	Likelihood expected to increase with education Fathers in reference group have FED < 8
FED2	= 1 if FED ≥ 12 = 0 otherwise		
FED3	= 1 if FED ≥ 13		
BLACK	= 1 if father black = 0 otherwise	Item 2-32	
OTHER	= 1 if father other nonwhite or Chicano = 0 otherwise		

INDEPENDENT VARIABLES--Continued

Variable Name	Definition	Source	Effect on Likelihood of Termination
FSOUTH	= 1 if father born in South = 0 otherwise	Item 3-17	Unknown
FFOR	= 1 if father foreign born = 0 otherwise	Item 3-17	Unknown
DISAB	= 1 if father disabled = 0 otherwise	Item 3-40	Presence of disability should reduce likelihood of termination
	Family Size		
CHILD	Number of children in family	Items 2-8, 2-9, 2-10, 2-11, 2-15	Likelihood should decrease with number of children
	Father's Work Experience		
FWAGE	Estimated potential weekly earnings of father	Regressions reported in Appendix III	Likelihood of termination positively related to expected wage
JOBC	= 1 if father employed at beginning of quarter = 0 otherwise	Items 3-27, 3-28, 3-32	Employment experience should increase likelihood of termination
JOBY	= 1 if father not employed at beginning of quarter but employed within preceding year = 0 otherwise		Excluded (reference) group has no significant experience
JOBY2	= 1 if father not employed at beginning of quarter or in preceding year but has employment experience		
	Class of Father's Most Recent Occupation		
PROF	= 1 for professional, technical, and kindred workers	Item 3-23	Expectation of effect ambiguous for all classifications except OPER. OPER includes cannery workers and should have a positive coefficient
SALES	= 1 for sales and clerical workers		
CRAFT	= 1 for craftsman		

INDEPENDENT VARIABLES--*Continued*

Variable Name	Definition	Source	Effect on Likelihood of Termination
OPER	= 1 for operatives, including transport workers		
LABOR	= 1 for laborer		
STDT	= 1 for students		
ARMED	= 1 for armed forces members		
MISS	= 1 for no previous occupation		
	(all variables = 0 if definition not satisfied)		
	Reason for Termination, Most Recent Job		
NOWRK	= 1 if not previously employed = 0 otherwise	Item 3-32	See text for discussion of effects
FIRED	= 1 if fired = 0 otherwise		
LDOFF	= 1 if laid off = 0 otherwise		
QUIT	= 1 if quit = 0 otherwise		
STRIKE	= 1 if on strike = 0 otherwise		
WRKING	= 1 if still working = 0 otherwise		WRKING is excluded in models which include JOBC
HEALTH	= 1 if health reasons = 0 otherwise		
MISC	= 1 if other reason or no information = 0 otherwise		

INDEPENDENT VARIABLES--Continued

Variable Name	Definition	Source	Effect on Likelihood of Termination
	Employment-Related Services		
FES1	= 1 if father receiving employment-related service at time of sample = 0 otherwise	Item 4-30 *et seq*	See text
FES2	= 1 if father enrolled in and completed employment-related service in past = 0 otherwise		
FES3	= 1 if father enrolled in and completed $\geq$ 2 employment-related services in past = 0 otherwise		
NWES	= 1 if father enrolled in and completed one or more Non-WIN employment-related services in past		
	Family Income		
OTHINC	= 1 if family has income from source other than earnings or AFDC = 0 otherwise	Item 5-28	Effect on likelihood of termination is ambiguous.
OTHINCP	= OTHINC*ADFG3		

FRAGMENTATION VARIABLES

The following variables are used in the fragmentation models in addition to variables from the list above.

Variable Name	Definition	Source	Effect on Likelihood of Termination (*ceteris paribus*)
	Initial Welfare Experience		
TYP1	= 1 if mother in case went on welfare within six months of birth of first child = 0 otherwise	Item 1-6	Unknown
TYP2	= 1 if mother in case went on welfare after her first child was more than six months old and no man was present in the family at the time = 0 otherwise		
TYP3	= 1 if mother in case went on welfare after her first child was more than six months old and a man was present at the time = 0 otherwise		
	Mother Pregnant		
PREG	= 1 if mother pregnant at sample month = 0 otherwise	Item 2-28	Unknown
PMPREG	= 1 if mother pregnant at date of marriage = 0 otherwise	Item 2-27	Unknown

FRAGMENTATION VARIABLES--Continued

Variable Name	Definition	Source	Effect on Likelihood of Termination
Length of Marriage or Cohabitation			
LENGTH	= length of marriage or cohabitation in years	Items 2-25, 2-26	Unknown
MAR1	= 1 if LENGTH $\geq$ 2 years = 0 otherwise		
MAR2	= 1 if LENGTH $\geq$ 6 years = 0 otherwise		
MAR3	= 1 if LENGTH > 10 years = 0 otherwise		
Time on Assistance			
TIMEC	Length in months of welfare dependence prior to beginning of quarter		Likelihood of fragmentation may increase with duration of spell

FOOTNOTES TO APPENDIX II

[1] R. Booth and M. Wiseman, *Income Dynamics Project County Welfare Sample Variable Location and Codebook* (Berkeley, California: University of California Institute of Business and Economic Research, 1976). I have included references only for the first quarter. For quarters subsequent to the first all variables were updated and the restrictions re-applied.

[2] Data collected from *Area Trends in Employment and Unemployment* (Washington: U.S. Department of Labor Manpower Administration), various issues.

[3] The employment rate variable is the change in the ratio of employment in selected industries to population in the 18-64 year age range for Alameda County over the three-month time span covered by each observation. Employment data were supplied by the California Employment Development Department and cover only industries with workers covered by the unemployment insurance benefit system and which had such coverage throughout the time period covered by this study.

APPENDIX III

REGRESSIONS EMPLOYED FOR CALCULATION OF WEEKLY EARNINGS VARIABLES DEPENDENT VARIABLE IS LOG OF EARNINGS IN 1969 COEFFICIENT FOR:

(Numbers in parentheses are standard errors)

Variable	White Men	White Women	Nonwhite Men	Nonwhite Women
1. CONSTANT	3.377 (.1594)	2.457 (.1793)	3.232 (.2344)	2.931 (.2639)
2. LNWKS	1.125 (.0193)	1.321 (.0177)	1.064 (.0412)	1.149 (.0421)
3. ED1	-.2301 (.2084)	.4984 (.3463)	.7154 (.3358)	.6259 (.4721)
4. ED2	-.4126 (.2464)	-1.019 (.4067)	-1.6803 (.5018)	-1.306 (.6656)
5. ED3	-.7866 (.2433)	-.1557 (.3488)	.4130 (.6681)	-.8312 (.7956)
6. ED4	1.490 (.1555)	.9623 (.2220)	.8927 (.4677)	1.758 .5481
7. EX1	.4258 (.0561)	.2868 (.0780)	.2308 (.1466)	.4129 (.1621)
8. EX2	.0191 (.0823)	-.3510 (.1182)	-.0801 (.2119)	-.2135 (.2489)
9. EX3	-.0215 (.1637)	.5295 (.2445)	.0402 (.3545)	1.004 (.5059)
10. EX4	.0753 (.1310)	-.2814 (.1958)	.1237 (.2761)	-.9371 (.3993)
11. SOUTH	-.0046 (.0318)	.0382 (.0469)	.0772 (.0473)	-.0691 (.0572)
12. ST5	.0837 (.0247)	-.0552 (.0333)	.0113 (.0544)	.0863 (.0664)
13. VOCTRN	.0416 (.0179)	.0325 (.0250)	.0333 (.0463)	.0685 (.0552)
14. SPAN	-.0809 (.0321)	.0918 (.0453)	-.2709 (.0951)	-.0181 (.1274)
R^2	.57	.61	.53	.50
Observations	7862	5199	1329	1077

APPENDIX III--continued:

VARIABLES IN EARNINGS REGRESSIONS

Variable	Definition
1. CONSTANT	= 1 for all observations
2. LNWKS	Logarithm (natural) of weeks worked in 1969
	ED ≡ years of school completed
3. ED1	ED1 = ln[Min(ED, 7)]
4. ED2	ED2 = ln[Min(ED, 11)]
5. ED3	ED3 = ln[Min(ED, 15)]
6. ED4	ED4 = ln ED
	EX ≡ age - estimated age at completion of school
7. EX1	EX1 = ln[Min(EX, 5)]
8. EX2	EX2 = ln[Min(EX, 10)]
9. EX3	EX3 = ln[Min(EX, 30)]
10. EX4	EX4 = ln EX
11. SOUTH	SOUTH = 1 if born in south, = 0 otherwise
12. ST5	ST5 = 1 if in California in 1965, = 0 otherwise
13. VOCTRN	VOCTRN = 1 if has vocational training, = 0 otherwise
14. SPAN	SPAN = 1 if has Spanish surname, = 0 otherwise

DATA SOURCE: 1970 census user sample for San Francisco-Oakland S.M.S.A. Sample includes only persons who worked in 1969.

THE TIME-POOR: A NEW LOOK AT POVERTY

by

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ABSTRACT

If the minimal nonpoor level of consumption requires both money and household production, then the official poverty standards do not correctly measure household needs. Any income support program that corrects for money differences but not for time differences across households will discriminate against households with only one adult. Furthermore, such programs will provide financial incentives for households to form in certain ways. This paper sets up a two dimensional poverty definition, and then shows how this standard can be used to define voluntary versus involuntary poverty. This framework is also used to calculate the equivalent of changes in household composition to changes in earnings at the threshold level of consumption.

THE TIME-POOR: A NEW LOOK AT POVERTY

Since the official poverty index was developed in the mid-1960's by the Social Security Administration (SSA),[1] their categorization by income has been accepted as an equitable criterion with which to compare different types of households. As a result, policymakers have thought that adjusting the benefit structure of an income transfer program for money differentials across households corrected for the resource differences of these households. But households differ in their time resources as well as money income. This paper argues that to base the benefit schedule of an income support program on an index which defines poverty in terms of money income alone is to create gross inequities across households that vary in their number of adult hours. The equity problem, important in itself, takes on added significance when it creates incentives for individuals to adjust their living arrangements, and the problem becomes aggravated if the household structure appears to be in a transitional phase as in the 1970's. The impact of an income maintenance scheme on the structure of households may prove to be more important over the long run than the program's influence on the labor supply, an issue that has captured the attention of economists and policymakers. This paper attempts to shift the focus of attention by laying a foundation for analyzing the interaction between proposed income maintenance programs and the formation of households.

First, a poverty standard in terms of both time and money inputs is defined. In this definition, the necessity of home production for the well-being of the household's members is emphasized. Then a measure of this generalized poverty standard is used to estimate the number of additional female-headed families who would be counted as poor because of a deficiency of nonmarket time. The policy implications of the new definition are explored by using the index to distinguish among the hard-core poor, the temporary poor, and the voluntary poor, and to estimate the potential poverty population. The paper concludes with a discussion of the policy dilemmas posed by the interaction between benefit schedules and household composition.

I. Defining the Needs and Resources of Differing Households

The method currently used to determine the poverty status of a household is to compare its available money resources to the official poverty index. But the resources of each household are determined by its assets and the number of adult hours which are available to earn income in the marketplace or to produce consumption goods and services outside the marketplace. A household's ability to translate the available time into consumption depends upon its productivity in both market and nonmarket work, so that the same amount of available time can represent vastly different levels of resources across households. A measure of the money value of time is available for market work in terms of wages: the value of the time spent outside the marketplace must be inferred. Quantification of household resources, then, must include an estimate of earned income, non-market (household) production, and assets.[2]

Even if we had general agreement about the minimal nonpoverty standard of living, we would encounter difficulties in translating this standard into an index which represents the time and money inputs a household needs to attain the standard. These difficulties are increased if time and money are not always substitutable in producing household goods and services. For example, a reasonable assumption is that the attainment of the poverty threshold requires the household to have a minimal input of time regardless of the amount of money available, and a minimal input of money regardless of the amount of time available. If either the time or money available to the household falls below these levels, designated as T_0 and M_0 respectively, then the household will be considered to be poor. The additional assumption is made that these minimal levels of time and money are not sufficient inputs by themselves to provide a nonpoverty standard of living. If only T_0 time (or M_0 money) is available, then the household needs M_1 money (or T_1 time) to reach the poverty threshold. One possible shape of this "poverty threshold" curve (or poverty isoquant), which represents the combinations of time and money inputs sufficient to attain the minimal nonpoverty standard of living, is shown as curve CABD in Figure 1. (INSERT). T_m designates the maximum number of adult hours available to the household. The number and characteristics of the household's members determine the parameters of this curve, so that a different threshold curve must be defined for each type of household. The poverty standard presented here identifies those households which appear to have insufficient resources to maintain the physical and mental well-being of their members. The issue of which of these households should be aided by government programs will be addressed below.

How does this generalized definition of the poverty threshold relate to the definition currently used? The SSA definition consists of a set of income cutoff points, one for each type of household (by sex of head, number and age of members, place of residence). These points represent the money income needed to purchase the necessities of life in the contemporary U.S. The basis of the index is the economy food basket, which is the lowest cost of the Department of Agriculture's (USDA) various food

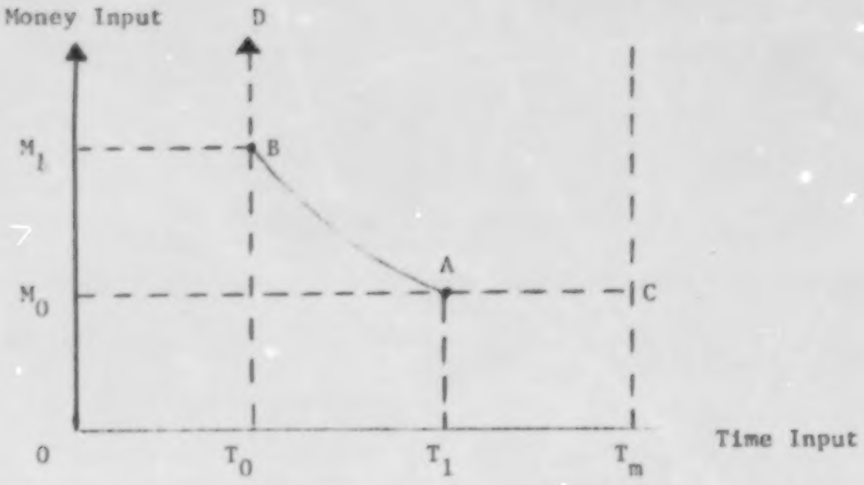
Money Input
D
M_1
B
A
M_0
C
0
T_0
T_1
T_m
Time Input

Figure 1. The Poverty Threshold Curve for a Given Household

plans. The USDA terms this food plan nutritionally adequate "for emergency or temporary use when funds are low."[3] The time input necessary to sustain the household at this level of income is not calculated. However, time must be an important input in the preparation of the economy food basket, since (according to USDA's description) the lower the cost of a food plan, the higher the level of skill and time required in marketing and food preparation.[4] Furthermore, in order for the household to be adequately fed using the allotted food budget, the requirements are made that all meals are prepared at home and that "the homemaker is a good manager and has the time and skill to shop wisely."[5] Although there is no explicit assumption that a household with income equal to the poverty standard must have a person working full time in the home to be nonpoor, this assumption does seem to be implicit in the derivation of the official poverty standards.[6] If the SSA income cutoffs represent the minimum money income necessary for a household to be at the poverty **threshold** (M_0), then the official definition corresponds to the horizontal line M_0C in Figure 1. The official poverty count includes those families with money inputs below the cutoff line M_0C, but the generalized definition would include those families whose time and money resources fall below the boundary CABD. Households with money income less than M_0 are categorized as poor by both standards. Households which are not currently categorized as poor but which would be counted as poor using the generalized definition are those with incomes above M_0 but with limited amounts of nonmarket time available relative to time requirements of the household. The next section presents estimates for the threshold curve for various types of households.

II. Measuring Household Needs

The only parameter of the threshold curve which has been identified is M_0,[7] which corresponds to the SSA income cutoffs. To identify the entire curve, the parameters T_1, T_0, and M_1 must be given along with some measure of the household's ability to substitute between time and money in the consumption process. An approximation of the threshold curve for ten types of households is discussed below as an illustration of how these curves might be derived. The details of the actual calculations for T_1, T_0, M_1, and T_m are given in the appendix.

The boundary point (T_1, M_0) on the threshold represents the combination of the minimum number of market inputs with the corresponding number of time inputs necessary for the household to be nonpoor. At this point few services are assumed to be purchased; and the market goods purchased, such as food, do not include "labor saving" items. An approximation of T_1 is drawn from actual household time budgets, which document the time that households spend on "homemaking" tasks. The boundary point (T_0, M_1) represents the situation where the maximum substitution of money for nonmarket time has been made with the consumption level of the household maintained at the poverty threshold. T_0, which respresents the amount of time necessary for supervision of those hired to perform the necessary tasks and for overall management of the household, represents an unrealistic case for those at the poverty threshold. For this study, T_0, which is assumed to be equal to 14 hours per week for each household, is not an important parameter because market work is constrained. M_1 is equal to M_0 plus the amount of money necessary to buy substitutes (i.e., others' time) to perform all homemaking tasks. The assumed values for the threshold parameters M_0, T_1, and M_1 are shown in

Table 1. For example, a household with one adult and 2-3 children must have \$78 income and 61 hours of nonmarket work or, equivalently, \$172 income and 14 hours of nonmarket work, in order to be nonpoor. The adult time available to the household for market and nonmarket work, T_m, is defined as the maximum amount of time an adult can work each week over an extended period of time and maintain his or her mental and physical well-being. The minimal time necessary for maintenance (sleeping, resting, eating, personal care, and leisure) is approximated to be 81 hours per week. Subtracting this number from the total of 168 hours in a week equates T_m to 87 hours per week for each adult in the household. The time available from older children is ignored here, because their time is not easily substitutable between market and nonmarket work. Exclusion of children's time results in greater observed economies of scale for time inputs as family size increases than is actually the case. As the number of children increases, some of the additional time inputs required are supplied by the older children.[8]

The shape of the threshold curve is determined by the household's ability to substitute its home-produced goods and services for market goods and services. In the case where the replacement value of household work is constant, the household can perfectly substitute money for time inputs. Alternatively, the household may face the situation where it replaces its time inputs with increasingly more costly market inputs.[9] In the applications of the generalized standard below, \$2.00 and \$2.50 will be used as two examples of the average replacement cost of nonmarket time between T_1 and T_0. Both examples will have two cases -- (I) constant replacement cost, and (II) variable (increasing) replacement cost.[10]

Table 1. Parameters of Poverty Threshold (Weekly Values)

Household Type	M_0[a]	T_1 (hours)	M_1[b]
1 adult with:			
0 children	$ 43	31	$ 77
1 child	58	57	144
2-3 children	78	61	172
4-5 children	106	63	204
6 or more children	136	69	246
2 adults with:			
0 children	$ 58	43	$116
1 child	70	62	166
2-3 children	94	66	198
4-5 children	128	68	236
6 or more children	140	74	260

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[a] The M_0 figures are the 1973 SSA cutoff points. The M_0 figures for the single adult households are for female heads. The corresponding figures for male heads are slightly higher.

[b] The M_1 figures used $2.00 per hour as the average replacement costs of nonmarket time inputs. If $2.50 were used, the figures would be: 1 adult ($85, 165, 195, 228, 273); 2 adults ($130, 190, 224, 263, 290).

III. Recounting the Poor

One use of the generalized standard is to identify those households which have incomes above M_0 but do not have enough nonmarket time available to be above the poverty threshold. This calculation requires an estimate of the time an average full-time worker is engaged in market work activities. One time study has shown that paid work hours account for 82 percent of total work-related time with the remaining 18 percent evenly divided between travel time and unpaid hours of work.[11] In the calculations below, 40 hours will be used as the representative paid work week, and the full-time worker will be assumed to spend 49 hours engaged in work-related activities.

Any household with an able-bodied adult engaged full-time in nonmarket work will have more than the required T_1 hours of household work. If all adults in a household work full time, the amount of time available for nonmarket work each week is equal to 38 hours per adult. A household with more than one adult and at least M_0 income will not be in poverty according to the generalized definition, since that household has at least 76 hours available for nonmarket work. But note that, although M_0 is sufficient income for the household composed of two working adults with children to be nonpoor, the adults will have less than an hour each day in which they are not engaged in market work or essential housework.[12] On the other hand, even with an income of M_0, a household with only one adult will be in poverty if that adult works from 13 to 30 hours, depending upon the number of children.

In reality, any discussion of the single adult with children translates into a discussion of the female-headed household (i.e., a single woman with children). In 1973, women headed 56 percent of the poverty households which had children under 18. Yet even this large number did not include all female-headed families that would have been classified as poor by the generalized definition. Applying the broader standard to the category of families composed of one female with related children under 18 results in an additional 272,000 of these families being counted as poor in 1973.[13] Including these families in the 1973 poverty population would have increased the number of poor female-headed families with children by 14 percent and increased the proportion of all families in poverty from .088 to .093.[14] The scarcity of resources available to female-headed families will become an increasingly important problem if the number of such households continues to grow. Female-headed families constituted only 9 to 10 percent of all families during the 50's and 60's, but their relative numbers grew sharply during the early 70's. In March 1975, 13% of all families were headed by a woman.[15] An increase in the number of female-headed families will result in more families in (or near) poverty because of the low wage rates available to most women and the high time requirements of the household.

These results serve to underscore the point that income figures alone are not a good indicator of family resources. For example, three different four-person families -- (a) one employed adult and three children, (b) two employed adults and two children, (c) one employed adult and one homemaker with two children -- each with an income of $4505 would have been living at the poverty threshold in 1973 by the official definition. By the generalized standard, family A would have been in poverty, with a deficit of 23 hours of time, family B would have had 10 hours available for consumption above the poverty threshold, and family C would have had 59 excess hours. The use of the generalized definition would increase the number of persons in poverty; but more importantly, this approach defines more accurately the resources and choices available to various types of households.

IV. Defining the "involuntary" poor

The starting point for government transfer programs is the goal of providing income to those households whose resources are so scarce that their level of consumption is below the poverty threshold. Equity considerations require policymakers to differentiate among poor households on the basis of whether their poverty is a result of their own time allocations or a result outside of their control. In addition, the policymaker needs to know which households are expected to remain in poverty and which are temporarily in poverty because of short-run constraints imposed upon their market time, such as unemployment or unexpected household demands. As shown in Figure 2, a household without assets or outside income must have a net wage rate at least equal to W_c (the slope of the line T_mE) in order to reach the poverty threshold.[16] (INSERT) At this point, E , the household will have net income M_c , nonmarket work time T_c , and market work time T_m-T_c. If the maximum potential wage rate for a household is less than W_c , that household can be defined as involuntarily poor. Such a household can be expected to remain in poverty until some change in resources or needs occurs either through a change in the composition of the household (e.g., remarriage or children leaving home) or through a change in the return from market work (e.g., as a result of job training). A household's actual wage rate may fall below its potential wage rate for short periods of time as a result of unemployment or a job transition. In such cases, the household can be expected to be involuntarily poor for a short duration. Three cases exist where a household may be observed below the

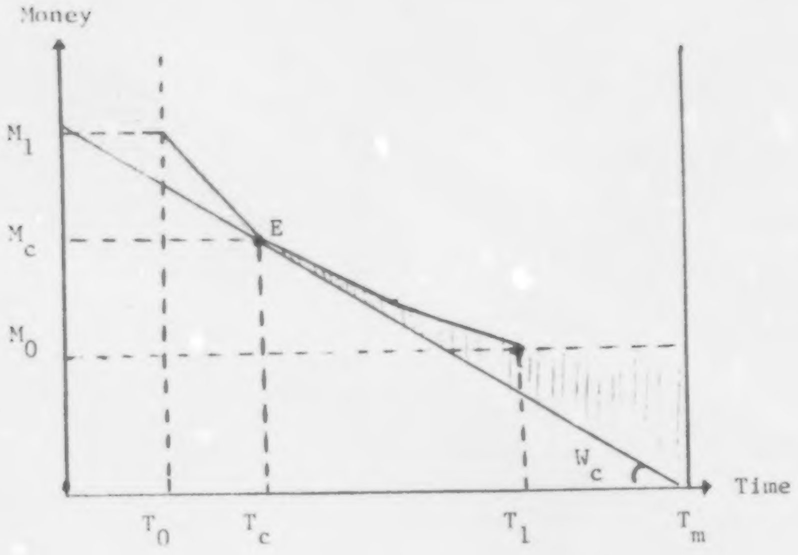
Money
M1
Mc
M0
E
Wc
Time
T0
Tc
T1
Tm

Figure 2. Illustration of the Critical Wage Solution

generalized threshold even though the household has sufficient resources to be above the threshold:

> Case A ("Time Poor"). The household spends too much time in market work and too little in nonmarket work. The shaded area to the left of E in Figure 2 represents such possible points, where $W \geq W_c$, $T<T_c$, and $M>M_c$.
>
> Case B ("Time Rich"). The household spends too little time in market work and too much in nonmarket work. The shaded area to the right of E represents such possible points, where $W \geq W_c$, $T>T_c$, and $M<M_c$.
>
> Case C ("Work as Consumption"). The household opts for a job with a wage rate $W<W_c$ although it has a potential wage rate $W_p \geq W_c$.

Households which are represented by these three cases cannot be defined as involuntarily poor provided that the change in market work which is necessary to be nonpoor is actually an option open to them. This requires that:

> Case A. They could actually reduce their work hours at their current wage, or they could work the required number of hours at any wage $W \geq W_c$.
>
> Case B. They could actually increase their work hours at their current wage or they could work the required number of hours at a wage $W \geq W_c$.
>
> Case C. The job currently held is not viewed as a stepping stone to a higher paying job (i.e., the current job does not represent an investment by the jobholder) and the worker could actually work the necessary hours at a wage $W \geq W_c$.

If these conditions do hold, then the household should be classified as voluntarily poor.

Estimates of the critical wage rate, (W_c) , hours of work, (T_w) , time available for nonmarket work above $T_1 (T_s)$, and income (Y) are shown in Table 2 for ten hypothetical households using 1973 SSA income cutoffs and four examples of replacement costs for nonmarket time. The wage rates shown have been adjusted for the lost time associated with working (i.e., the 18 percent of the time spent in travel and nonpaid hours at the workplace) and are the wage rate per paid hour. The assumption that no adult would be expected to spend more than 49 hours in market work activities represents a binding constraint for all households except the one adult, one child family. For households with two adults, or a single adult with no children, the critical wage rate is determined by the corner solution at point (T_1, M_0), since the household has a "surplus" of time and does not need to purchase any time inputs in order to work. For example, in a 2 adult, 4-5 children household, both adults working full-time must earn $1.60 per hour in order to reach the weekly threshold income of $128. In this case, the adults have 8 hours above the time required for full-time jobs and the 68 hours of essential nonmarket work. If only one adult in a two adult household is assumed to work, the wage given should be doubled and the hours worked halved. In contrast, single adults with children must buy off time in order to work full time in the marketplace. For example, a single adult with 2-3 children must earn between $2.89 and $3.33 per hour, depending upon the replacement cost of nonmarket time, in a full-time job in order to earn the threshold income, which includes the SSA cutoff income of $78 plus the money to buy substitutes for 23 hours of essential nonmarket time.

No money work expenses (e.g., the increase in transportation or food costs which result from working) and no fringe benefits which would replace consumption goods represented by the threshold curve (e.g., medical insurance) are included in these calculations. The critical wage includes compensation for the decrease in nonmarket time inputs below T_1 which results from market work, but the loss of nonmarket time inputs above T_1 is not compensated. For this reason, households with

Table 2. Critical Wages with Weekly Income and Hours of Work: Case with No Unearned Income.[a]

Family Type	Replacement Cost of Nonmarket Time															
	$2.00 per hour								$2.50 per hour							
	I. Constant				II. Variable[b]				I. Constant				II. Variable[b]			
	W_c	Y	T_w (hr)	T_s (hr)	W_c	Y	T_w (hr)	T_s (hr)	W_c	Y	T_w (hr)	T_s (hr)	W_c	Y	T_w (hr)	T_s (hr)
2 adults with:																
0 children	$ .72	$ 58	98	33	Same for all cases.											
1 child	.87	70	98	14	Same for all cases.											
2-3 children	1.17	94	98	10	Same for all cases.											
4-5 children	1.60	128	98	8	Same for all cases.											
6+ children	1.74	140	98	2	Same for all cases.											
1 adult[c] with:																
0 children	$1.07	$ 43	49	7	Same for all cases.											
1 child	2.35	58	30	0	$2.20	$ 88	49	-19	$2.35	$ 58	30	0	$2.35	$ 58	30	0
2-3 children	3.09	124	49	-23	2.89	116	49	-23	3.38	135	49	-23	3.12	125	49	-23
4-5 children	3.88	156	49	-25	3.68	148	49	-25	4.20	168	49	-25	3.94	158	49	-25
6+ children	4.95	198	49	-31	4.75	190	49	-31	5.34	214	49	-31	5.09	204	49	-31

a. The 1973 poverty cutoff figures are used for M_0. W_c is the critical wage, T_w is the number of work-related hours, Y is the threshold income, and $T_s = T_m - T_w - T_1$, the number of hours available after market work and essential nonmarket work, if positive, or the number of essential nonmarket hours bought off, if negative.

b. See footnote 10 for the variable replacement costs used.

c. W_c and M_c are for female heads; for male head, slightly higher values are necessary since M_0 is higher.

nonmarket time inputs greater than T_1 have total resources above those represented by the threshold curve.

Examination of the critical wage rates in Table 2 reveal that changes in a household's composition, which shift the poverty threshold, have a dramatic effect upon the household's needs and resources. These threshold shifts are equivalent to large wage rate changes in their impact upon the poverty status of a household. For example, consider the following types of changes:

1. Change in the number of children at home. The critical wage rate for the single parent household more than doubles with the entrance of the first child. Once children are present, the entrance or departure of a child changes the critical wage by approximately 25 to 35 percent, depending upon the number of children present. For example, W_c for a single adult with one child increases from approximately \$2.35 to \$3.10 with the addition of another child. For two-adult households, the critical wage rates change much less dramatically with the entrance or departure of the first child (approximately 20 percent) or the sixth child (less than 10 percent). Other changes in the number of children are accompanied by a change in the critical wage of approximately one-third.

2. Change in the number of adults. The departure of an adult from a two-adult household results in the remaining adult's critical wage increasing by a factor of approximately 2.4 to 3.0, depending upon the number of children present. For example, W_c for a household with 2-3 children increases from \$1.17 to \$3.10 if one adult rather than two are present. Conversely, if an adult joins a single parent family, the critical wage rate for that household with two working adults will fall 60 to 70 percent.

3. Two households join into one. If two single parent households of the same size combine, the critical wage rate for these households will decline by approximately 45 to 55 percent, depending upon the number of children. For example, if two one adult, one child households combine, W_c decreases from $2.35 to $1.17. Conversely, the critical wage will increase by a factor of 1.9 to 2.2 if these households split. These values also approximate the average change in critical wages if households of different sizes join or split, although the household with the larger number of children will experience greater changes in W_c.

These examples serve to show that the well-being of households as well as the cost of any income support program will be influenced by the structure of households. Since government policy influences household formation, any analysis of an income transfer program must include the interaction between household composition and the benefit structure.

V. The Potential Poor

These critical wage rates can be compared to a distribution of potential wages in order to estimate the potential involuntary poverty population. The actual earnings distribution for urban, year-round workers from the 1970 census was used to derive the wage distribution shown in Table 3 (INSERT) This implicit wage distribution is higher than the actual potential wage distribution because it excludes workers who worked less than 50 weeks. A comparison of the critical wage rates (Table 2) with these actual wage rates, which should be increased approximately 16 percent in order to adjust for taxes and inflation,[17] show the following:

1. Approximately one third of all full-time female workers would not be able to support one child as a single parent. This is also true for approximately one out of eight male workers.

Table 3. Wage Distribution for Urban, Year-Round Workers, 1969

Hourly Wage($)[a]	Percent Distribution for Workers Aged 14 and Over	
	Female	Male
Total	100%	100%
W<1.00	11	5
1.00≤W<1.50	9	3
1.50≤W<2.00	15	4
2.00≤W<2.50	18	5
2.50≤W<3.00	16	7
3.00≤W<3.50	12	9
3.50≤W<4.00	8	11
4.00≤W<5.00	7	19
W≥5.00	5	38
Median Wage	$2.42	$4.33

[a] Hourly wages are calculated from yearly earnings of persons who lived in urban areas and who worked 50-52 weeks in 1969. The assumption that an average work year is composed of 2000 paid hours was used. Calculated from U.S. Bureau of Census, Census of Population: 1970, Vol. 1, Part I, U.S. Summary, Section 2, Table 247.

2. Over half (55 percent) of all full-time female workers would not be able to support 2-3 children as a single parent. The corresponding figure for males is around 20 percent.

3. Approximately one out of eight full-time male workers would not be able to support a spouse and 2-3 children.

These figures give a startlingly high estimate of the potential hard-core poverty population. With the present wage distribution, these figures show that many poor households, as well as those which might fall into poverty with the departure of an adult, cannot "work themselves out of poverty." This is especially true for single parent households. Many single parents, especially women, would not be able to earn enough at a full-time job to support dependents if necessary. The economic reality of the situation is that most single women (and many single men) with children must join with other adults or must receive government aid to be nonpoor.

VI. Policy Implications

Let us now leave the sterile world where only earned income exists and turn to the real world where taxation and transfer programs are important determinants of household income. The framework developed here can be useful in analyzing the distribution and impact of taxation programs. For example, consider the U.S. system that taxes earned income but not nonmarket production. In such a world, the provision of free child care could be argued on equity grounds for households in which all adults engage in market work. In addition, the evaluation of any income support program, from children's allowances to a negative income tax, must include a recognition of both time and money as necessary inputs for households. In this paper, only the example of a simple negative income tax scheme will be discussed.

A fundamental equity problem in devising a negative income tax scheme is deciding how to treat households with different numbers of adults. This problem arises in setting up the benefit-taxation schedule and any administrative rules governing work behavior. Consider the case where the guaranteed income level is M_0. Without any market work all households would be at point (T_m, M_0), which is above the poverty threshold by the amount of time $T_x = T_m - T_1$. The level of the household's consumption at (T_m, M_0) compared to the poverty threshold (T_1, M_0) depends upon T_x and its production value. These time resources above the threshold vary by household composition from 131 hours for two adults with no children to 18 hours for one adult with more than five children. If T_x exceeds 49 hours, then no compensation is needed to buy off essential nonmarket time in order for the household to remain nonpoor when an adult works full time. This situation holds for all households with more than one able-bodied adult and for the single adult with no children; participation at any wage rate will maintain the consumption of these households above the poverty threshold. Since the households composed of single adults with children have less than 49 hours available for market work, these households must be compensated for the "essential" nonmarket time which they lack when the adult works full time. Table 4 shows the wage rate necessary for the single, working adult with children to be on the threshold curve using two tax rates (1/3,1/2) and two constant replacement costs for household work ($2.00,$2.50).[18]

(INSERT) For example, a single adult with 2-3 children must earn between $1.72 to $2.85 an hour in a full-time job in order for the household to be on the poverty threshold under a negative income tax program with guaranteed level M_0. Let me emphasize that at these wage rates, the single parent households would be better off if the adult did not

Table 4. Critical Wages: Case with Negative Income Tax for a Full-Time Worker in a Single Parent Household[a/]

Family Type	Tax Rate = 1/3		Tax Rate = 1/2	
	Replacement Cost of Time[b/]		Replacement Cost of Time[b/]	
	\$2.00	\$2.50	\$2.00	\$2.50
	W_c	W_c	W_c	W_c
1 adult with:				
1 child	\$1.42	\$1.77	\$1.90	\$2.36
2-3 children	1.72	2.14	2.30	2.85
4-5 children	1.87	2.33	2.50	3.10
6+ children	2.32	2.88	3.10	3.84

a. The 1973 poverty cutoff figures are used for M_0.

b. The replacement costs of time are assumed constant over the range (T_0, T_m).

work at all, since the point (T_m, M_0) represents a level of consumption above the threshold. Any household with more than one adult will be above the threshold even if both adults work at zero wages. In this example of a negative income tax scheme, there is no way to prescribe the minimally acceptable wage rate for each household on equity grounds. This problem arises because the essential money needs for families have been considered, but the time differentials across families have been ignored.

The difficulties encountered in devising an income support program which is neutral with respect to household formation are exacerbated by the underlying problem of how to define households -- by legal relationships or by actual living arrangements. Any income support program that considers only related individuals as households will provide incentives for persons to form households, but not as legally recognized families. The dilemma, for example, is to treat equitably the following two households -- one of two adults, 4 children who are legally related; the other of two unrelated families, each with 1 adult and 2 children, who live together in one household. Most likely, the absence of total coordination and sharing results in the income and time needs of the double family household being greater than the needs of the single family household. If this is the case, treating the double family as a single family would be punitive and create disincentives for families to increase their resources by joining together. Yet, if the double family is considered as two households, their combined guaranteed income of $160 would have been 25 percent larger than the guaranteed income of $128 for the same-sized single family household in 1973. One possible solution would be to treat multiple family households neither as separate households, nor as one family. Instead, the economies of scale enjoyed from sharing household production might be shared by the government and the individuals. Since one way a family can increase its real income is to share household production with others, the government should provide maximum flexibility in rules governing household formation.

This brief discussion only begins to touch upon some of the problems encountered in analyzing the work and formation behavior of households under an income support program.[19] The purpose of this discussion has been to emphasize the point that any income support program will affect the options open to people in their household formation. Since the viability, both politically and economically, of a program will be affected by its household formation incentives, this problem should receive careful attention.

VII. Conclusions

The attainable level of consumption for a household depends upon income and the time available for nonmarket work. The inclusion of time in estimating household resources is especially important when considering those households at or near a poverty level of consumption. For households with children, the nonmarket time required to produce essential home services exceeds the hours usually required for a full-time market job. A major policy implication of defining the poverty thresholds in terms of both time and money inputs is that many single adults with children cannot command market wages high enough to be above the threshold without outside income or without joining up with other adults.

Households can affect their poverty status by varying their allocation of time between market and nonmarket work and by changing their composition. Although compositional changes are less frequent than changes in market work and are influenced more by noneconomic factors, they are equivalent to large earnings changes in their impact on the poverty status of the household. An estimate of the potential poverty population must include predictions of the impact of future compositional shifts on the pool of poor families which will require government aid.

The framework developed in this paper can be used for policy purposes to identify those households which are involuntarily poor and to differentiate among this group on the basis of whether a household is expected to have insufficient resources for a short or a long period. Although these guidelines can be useful in identifying those most in need of governmental help, they emphasize the difficulties encountered in trying to treat equitably households that differ in time and money income. Because essential production occurs in the household, and because large economies of scale are witnessed in household production, income maintenance programs should provide incentives for households to increase their real income by benefiting from these scale economies. More generally, this paper argues that an evaluation of the costs and the distributional impact of an income support program must include the program's influence upon household formation as well as work behavior.

Appendix. Derivation of Threshold Parameters

A. T_1

T_1 was calculated by estimating the average hours per day spent on various homemaking tasks. Because the government's poverty standard implicitly assumes the use of time intensive techniques, the time spent on food-related activities, clothing care, family care and marketing management was taken from the budget studies of nonemployed homemakers. The activity of house care seemed to have the largest variation and to reflect a homemaker's preferences as well as household needs; for this reason we used the time spent by employed homemakers on this activity. The average hours spent by the husband were added to the time spent by the wife to get total adult hours. Budget studies were taken from Kathryn Walker and William Gauger, "Time and Its Dollar Value in Household Work," Family Economics Review, Fall 1973, and Kathryn Walker, "Household Work Time: Its Implications for Family Decisions," Journal of Home Economics, October 1973. The Walker results were compared with two other budget studies (Florence Hall and Marguerite Schroeder, "Time Spent on Household Tasks," Journal of Home Economics, January 1970; Sarah Manning, "Time Use in Household Tasks by Indiana Families," Indiana Agricultural Experiment Station, Purdue University, Research Bulletin No. 837, January 1968.) Although these studies showed differences in time spent by activity, overall time spent on household work was comparable. The budget studies cited above were for husband-wife families; no data were available for single parent households. We assumed that the one parent family would spend a half hour less each day on food-related activities and house care and another 1-1/2 hours less each week on clothing care and shopping. This assumption was based upon a liberal interpretation of the decrease in time spent on these activities with one less child. The only data available on single persons were from "Summary of United States Time Use Survey," Survey Research Center, University of Michigan Ann Arbor, May, 1966. (This study was part of the larger, multinational study reported in A. Szalai (ed.), The Use of Time, The Hague: Mouton, 1972.) The final values of T_1 and its components are given below.

Type of Household	Food Activities	House Care	Care of Clothing	Family Care	Marketing/ Management	Total (T_1)
Two Adults:						
0 children	15	10	8	1	9	43
1 child	16	13	8	15	10	62
2-3 children	18	13	9	16	10	66
4-5 children	18	13	9	18	10	68
6+ children	19	14	10	19	11	74
One Adult:						
0 children	10	8	6	1	6	31
1 child	14	12	7	15	9	57
2-3 children	16	12	8	16	9	61
4-5 children	16	11	9	18	9	63
6+ children	17	12	10	19	10	69

The calculations for T_1 were performed by Cynthia Rence. Further details on the derivation of T_1 may be obtained from the author.

B. T_0

The value for T_0 is based upon the assumption that an adult member of the household must spend two hours a day managing the household and interacting with its members if the household is to function as a unit. For policy purposes, T_0 is not an important parameter since constraints are placed on the amount of time people are expected to participate in market work.

C. M_1

M_1 is calculated assuming the average replacement value of household work time is $2.00 and $2.50 per hour. These values are conservative for 1973. Comparable replacement rates were estimated for Syracuse, N.Y. in 1967; they ranged from $1.65 (dishwasher) to $2.50 (cleaning woman). (William Gauger, "Household Work: Can We Add It to the GNP?" Journal of Home Economics, October 1973.) For purposes of comparison, note that hourly wages of nonsupervisory workers on private nonagricultural payrolls increased 46 percent from 1967 to 1973 (Employment and Earnings, June 1975, Table C-1). Also, minimum wage was $1.60 in 1973, but it had been at that level since 1966 and was increased sharply in 1974 (Fenton Elder, "The 1974 Amendments to the Federal Minimum Wage Law," Monthly Labor Review, July 1974.)

D. T_m

T_m was constructed by subtracting the minimal amount of time a healthy person must devote to personal care, rest and leisure from the 168 hours available each week. The value used is the average time observed for all adults in a U.S. sample (See Table 1, Summary of United States Time Use Survey.) The observed average of 10.2 hours per day (or 71 hours per week) consisted of sleeping (7.6 hr.), resting (.3), eating (1.2), and personal care (1.1). The average adult was also assumed to need at least one hour each day for free time and three additional free hours on the week-end, or 10 hours free time per week. This is considerably below the 36 free hours per week for the average adult in the survey. Each adult, then, is assumed to need 81 hours of maintenance time each week. The calculations for T_m were performed by Cynthia Rence.

FOOTNOTES

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1. See Mollie Orshansky, "Counting the Poor: Another Look at the Poverty Profile," Social Security Bulletin, January 1965, and Mollie Orshansky, "Who's Who among the Poor: A Demographic View of Poverty," Social Security Bulletin, July 1965.

2. The theoretical antecedents of this paper can be found in Gary Becker, "The Allocation of Time," The Economic Journal, September 1965, pp. 493-517. Empirically, James Morgan's group at the University of Michigan have calculated income to needs ratios that include some household production (e.g., do-it-yourself projects, home grown food) and child care costs when all parents work in the income measure. This presents a start towards a more accurate calculation of household resources. See Survey Research Center, A Panel Study of Income Dynamics, Vol. I, University of Michigan, Ann Arbor, 1972.

3. U.S. Department of Agriculture,"Family Food Plans, Revised 1964," Family Economics Review, October, 1964. The original index was constructed by assuming that food expenditures represented 1/3 of the total budget. Annual adjustments in the standards are made by multiplying the threshold levels by the change in the Consumer Price Index. For a more detailed discussion of the poverty standard, see "Revision in Poverty Statistics, 1959 to 1968," Current Population Reports: Special Studies, Series P-23, No. 28, August 12, 1969.
4. See U.S. Department of Agriculture, "Family Food Plans and Food Costs," Home Economic Research Report No. 20, Nov. 1962.
5. Orshansky, "Counting the Poor," p. 10.
6. The implicit assumption of a person working full-time at home can be seen more clearly in the calculation of budgets for nonpoor households. These family budgets, issued by the Department of Labor, are calculated for a hypothetical family of four -- a 38-year-old husband employed full-time, his nonworking wife, a boy of 13 and a girl of 8. In the "low-cost budget," food accounts for 27 percent of the total budget and restaurant meals constitute 13 percent of the total food costs. The costs for food at home are based on the USDA low-cost food plan, which includes foods which require a considerable amount of home preparation. In addition, there is no provision for paid child care. This low-cost budget is considerably more liberal than the poverty standard; in 1973 the low-cost budget for the family of four was $8,181 (of which $1216 was for payroll and income taxes) and the comparable poverty standard was $4505. The equivalency tables issued for the purpose of transposing this low-cost budget to other family configurations do not allow for time

differentials. For example, the equivalent low-cost budget for the one parent, 3 children family is given as 96 percent of the standard budget. If the low cost budget assumes an adult working full-time at home, then surely this assumption is made in calculating the poverty standards which implicitly assumes more household production. U.S. Bureau of Labor Statistics, 3 Standards of Living, for an Urban Family of Four Persons, Spring 1967, Bulletin No. 1570-5; U.S. Bureau of Labor Statistics, "Autumn 1973 Urban Family Budgets and Comparative Indexes for Selected Urban Areas," USDL 74-304, June 16, 1974; U.S. Bureau of Labor Statistics, Revised Equivalence Scale for Estimating Equivalent Incomes or Budget Costs by Family Type, Bulletin No. 1570-2, November 1968.

7. Households must have money income M_0 available for consumption in order to be nonpoor. The income measure used should be net of taxes and work expenses. If a net measure is not used, the income of the working population will be overestimated.

8. See Gauger, "Household Work: Can We Add It To The GNP?", Journal of Home Economics, October 1973.

9. The household may face the situation where it replaces its time inputs with increasingly less costly market inputs before it reaches the point where substitution is with increasingly more costly market inputs. This situation will occur if the replacement cost of the time which must first be released for market work (for exmaple, child care) is higher than the replacement cost of time which can be released at the adult's discretion (for example, food related activities).

10. The variable replacement cost is assumed to be a step function on the grounds that households purchase bundles of goods (e.g. child care

services, food services, laundry services). For the cases of 1 adult with 1 to 5 children, when the average replacement cost is $2.00, the first 20 hours are assumed to cost $1.60 each, the second 15 hours are assumed to cost $2.00, and the remaining hours cost up to $3.00; when the average replacement cost is $2.50, the first 20 hours are assumed to cost $2.00 each, the second 15 hours cost $2.50, and the remaining hours cost up to $3.75. For the case of 1 adult with six or more children, the $2.00 average replacement cost is divided so that the cost of the first 20 hours is $1.60 each, the second 20 hours is priced at $2.00, the third 20 hours is priced at $2.40; for the $2.50 average cost, the three bundles of 20 hours are priced at $2.00, $2.50, and $3.00 each, respectively. In the cases of the single adult or the two adult households, no nonmarket time must be released for the adults to engage full-time in market work. Therefore, their variable rate of substitution between market and nonmarket time is unimportant in these considerations.

11. In a U.S. sample, both employed men and women spent 82 percent of work related time in "regular work," 9 percent in "non-work," and 9 percent in "trip to/from work." See Table 1, "Summary of United States Time Use Survey," Surrey Research Center, University of Michigan, Ann Arbor, May 1966.

12. Although the two adult household has enough nonmarket hours available after working full time to perform the essential household work, the timing of these activities may preclude both adults from working without buying replacement time at home. For example, child care services must be performed each day at certain hours. If the adults cannot arrange their work hours around the child care hours, then child care

services must be purchased when both adults work. The problems of scheduling nonmarket time have not been included in our calculations.

13. The generalized poverty rate for female headed households was calculated from the income distribution of single females with related children (U.S. Bureau of Census, Current Population Reports, "Money Income in 1973 of Families and Persons in the United States," Series P-60, No. 97, 1975, Table 27.) Full time work was assumed to consist of 40 paid hours per week, part-time work of 20 hours. Single female parents with fewer than six children can work part-time without buying off essential nonmarket time, provided the problem of young children who would require child care during working hours is assumed away. The amount of money income (M_w) needed to be on the threshold if the female head works full-time was calculated for each size household. The number of households with income above M_0 but below M_w was then calculated to be 756 thousand. Of these households, 35.6 percent were assumed to have the head working full time, which would make the household time poor. This rate represents the percent of female family heads who worked full-time at least 40 weeks during 1972 (U.S. Bureau of Census, Current Population Reports, "Female Family Heads," Series P-23, No. 50, 1974, Table 13.) An analogous calculation was made for female heads with more than five children who worked part-time. Similar calculations could be done for single male-headed households (1438 thousand) or for the female-headed households with unrelated children or elderly persons, which are part of the 3291 thousand female-headed families excluded from the present calculations.

14. U.S. Bureau of Census, Current Population Reports, "Characteristics of the Low-Income Population: 1973," Series P-60, No. 98, 1975, Table 4.

15. U.S. Bureau of Census, Current Population Reports, "Households and Families by Type: March 1975," Series P-20, No. 282, 1975, Table 5.

16. The critical wage rate, W_c, is equal to

$$W_c = \frac{M_0 \text{ x } \sum_i p_i h_i}{(T_m - T_1) + \sum_i h_i} \quad , \text{ for } \quad p_i \leq W_c < p_{i+1} \quad ,$$

where p_i is the replacement cost per hour and h_i is the number of hours in the ith bundle. The following cases occur:

a. Households with two adults or one adult, no children: market work constrained to 49 hours per adult, and no nonmarket hours needed to be purchased in order to work full-time. $W_c = \frac{M_0}{80}$, for each adult paid for 40 hours.

b. Households with one adult, two or more children: market work constrained to 49 hours, and $49-(T_m-T_1)$ hours had to be purchased at the assumed rates (see footnote 10). The critical wage rates are adjusted (multiplied by 1.22) for unpaid work related time.

c. The one adult, one child household: The adult can work up to 30 hours without purchasing substitutes for nonmarket time. This is the optimal solution $(W_c = 1.22(M_0/30))$ in all cases except the $2.00 variable replacement cost, which is similar to (b) above.

17. This 16 percent adjustment figure is based upon the following facts: average hourly earnings of production or nonsupervisory workers on nonagricultural payrolls increased 29 percent from 1969 to 1973 (*Employment and Earnings*, June 1975, Table C-1); at the median level of income ($6037), female heads of households who worked full-time, year-round paid payroll and income taxes equal to 13 percent of gross earnings. (Paul Ryscavage, "Annual Earnings of Household Heads," *Monthly Labor Review*, August 1975).
18. Since each adult is assumed to spend 49 hours in work activities, each household has 38 hours available for nonmarket work. The critical wage with a negative income tax is then equal to $p(T_1-38)/(1-t)49$, where p is the replacement cost of time and t the tax rate. This wage rate equals the cost to the household of substituting market time for essential nonmarket time. These wage rates are then multiplied by 1.22 to account for the unpaid hours associated with paid work activities.
19. For further analysis of the household's work response and formation behavior under AFDC and some hypothetical income support programs, see Vickery, "Household Formation and Income Support Programs," (in progress).

EDUCATION, EARNINGS, AND THE GHETTO:
PROBLEMS IN INFERENCE FROM GEOGRAPHICALLY RESTRICTED DATA

by

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Education, Earnings, and the Ghetto: Problems in Inference from Geographically Restricted Data

Michael Wiseman and Frederick Doolittle

Abstract

Several data sets providing information on characteristics of households residing in poverty areas of major American cities are currently available. In this paper the usefulness of these data for evaluation of policies designed to improve household welfare is considered. We argue that the geographic restrictions imposed by these data can produce important biases in policy evaluation. The point is illustrated by comparison of estimated returns to education calculated using a "poverty area" sample and returns calculated using a more inclusive data set. The paper is concluded with a discussion of the circumstances in which such data will prove valuable.

EDUCATION, EARNINGS, AND THE GHETTO: PROBLEMS IN INFERENCE FROM GEOGRAPHICALLY RESTRICTED DATA

Michael Wiseman and Frederick Doolittle*

It is well known that ordinary least squares estimates of the parameters of a regression model in which the disturbance term is not distributed independently of the explanatory variables will be biased. In empirical analysis of the relation between education and earnings the problem most frequently arises because of lack of information on family background and ability of workers. Since both socio-economic background and ability are likely to be positively correlated with educational attainment and earnings, regression of earnings on education alone will lead to an exaggerated impression of the effect of school on income.

A related problem is encountered when the sample employed is drawn in such a way that the likelihood that a member of the population under analysis will be included is not independent of the disturbance associated with that member in the population regression function. The direction and magnitude of the effect of this sampling bias on coefficients in a model is dependent upon (1) the correlation between the probability that a population member will be sampled and its disturbance and (2) the correlation, if any exists, between the sampling probability and the right-hand variables themselves. This second source of bias is the topic of this paper.

Our concern with the sample bias problem is motivated by two things. First, the bureau of the census has recently released a substantial body of data on the labor force experience of workers in "selected low-income areas" of major cities and certain rural counties in the United States.[1] These Census

Employment Surveys (CES) are extremely rich, covering in each labor market area such factors as training received, current and past jobs, education, family status and earnings for well over a thousand workers. The labor force participation and experience data in the Census Employment surveys are far superior to the information on these topics collected in the decennial census. However, the scope of the CES is quite limited. These data were collected only for adults residing in areas "identified first by reference to 1960 census data and subsequently corroborated by a variety of local sources as likely to contain relatively high proportions of persons with low income."[2]

Because of its richness, it is naturally tempting to use the CES data source to evaluate the impact of education, training, experience and other variables which can be affected by manpower policy on worker earnings. However, use of the CES in this way is hazardous because those for whom such factors have "paid off" may have left the areas sampled altogether. Using the CES for evaluation of policy could, in other words, be like surveying the inmates of a penitentiary to find out whether or not crime pays. The empirical significance of this effect is difficult to assess since data similar to that collected in the CES is unavailable for people residing outside the sampled areas, but the bias issue must be considered before such data can be exploited.

The work of Bennett Harrison on the determinants of earnings for ghetto residents provides the second source of motivation for our concern.[3] Harrison has in a series of widely-cited publications argued that the payoff to education for nonwhites in American ghettos is at best low and, over certain ranges, not significantly different from zero. This conclusion is based primarily on analysis of the earnings of workers residing in poverty areas of twelve of the largest American S.M.S.A.'s. These poverty areas -- termed "ghettos" by Harrison -- are in most cases virtually identical to the areas covered by the census employment surveys. However, Harrison's data source, the 1966 Survey of Economic Opportunity (SEO), also includes data on residents of nonpoverty areas. As a result it is possible to use the SEO and a reevaluation of Harrison's work to assess the importance of biases introduced in empirical analysis using geographically restricted data like that provided by the CES.

In section one we review the structure of the SEO and describe Harrison's procedure. In section two alternative estimates of the returns to education using ghetto and more comprehensive samples are calculated and evaluated. The paper is concluded with caveats, suggestions for future research and data collection procedures, and a brief consideration of the circumstances in which data like that provided in the Census Employment Surveys may be useful.

I. The Survey of Economic Opportunity and the Harrison Research

By now the Surveys of Economic Opportunity are familiar to virtually everyone involved in research on household economic behavior.[4] The SEO was conducted in two years, 1966 and 1967, and, in each year, in two samples. The first was a national cross-section patterned after the Current Population Survey. The second was a supplement designed to increase the number of observations obtained on nonwhites. The supplement was drawn exclusively from census tracts containing a large proportion of nonwhite persons. The object of the supplementation was to improve information available on poor families, many of which are known to be nonwhite. On the original data tape all households residing in these "nonwhite" areas are identified.

In additon to the information on neighborhood racial composition the SEO indentified households residing in "poor" areas of central cities of large (250,000+) S.M.S.A.'s. These tracts were selected on the basis of criteria involving the proportion of tract families with incomes less than $3,000, the proportion of families headed by single adults, average education and skill levels of male residents, and housing deterioration. By and large, the areas designated as "poor" in the SEO are "substantially nonwhite," but areas of nonwhite population and "poverty areas" in the survey are not coterminous.[5] In Figure 1 we have sketched a "stylized" Survey of Economic Opportunity city with "poor," "nonwhite," "central city" and "suburban" areas marked.[6] For twelve large S.M.S.A.'s covered in the SEO the actual boundaries of these areas are available in published sources.[7]

The observations in the SEO on workers residing in the poverty areas are employed in an important segment of Bennett Harrison's research on earnings and unemployment in the ghetto. To assess the usefulness of education and training as tools for improving earnings, Harrison regressed weekly earnings, annual earnings, unemployment rates, and an index of socieconomi status on measures of education, age, training received, industry, location and an indicator of sex for black and white poverty area residents. His results indicate little payoff to education for ghetto nonwhites in what is probably the critical range for an anti-poverty policy: from 8-15 years. Indeed for nonwhites, Harrison estimates the return to a high school diploma (compared to 10 years of education) to be only about $118 per year. Harrison was unable to control for family background, ability, and other key variables likely to be correlated with his regressors. But insofar as they are positively correlated with earnings, omission of these factors causes regression estimates of the return to education to be biased upward and Harrison's estimates of the return to education to be, if anything, overstated.

Harrison is, of course, aware of the possiblity that his estimates of the returns to education may be biased downward by his exclusion of nonghetto residents. In published work he responds to this problem in two ways. First, he suggests that by and large ghetto residents don't leave the ghetto. This statement is supported only by a "decidedly unofficial" B.L.S. analysis of moves by 7,200 ghetto families over a two-year period. However, it is possible that the critical period for ghetto exodus occurs when a worker is young, perhaps before he or she marries. By looking only at established households, the B.L.S. may have assured that only relatively sedentary units were interviewed. Since in all of the cities surveyed there are indentified areas of "substantial nonwhite population" outside the poverty areas, it is clearly possible for economically successful blacks to move out of the "ghettos."

Second, Harrison argues that returns to education are in general no better for nonghetto residents than for people who live in the SEO poverty areas. To support this contention, Harrison ran additional regressions employing observations drawn for individuals residing outside "ghetto" areas in the remainder of the central city and the suburban ring. He found "no /earnings/ payoff at all for nonghetto nonwhites who did not at least begin a college program. In the nonpoverty central city, nothing short of a college degree brings statistically significant returns to nonwhites."[8] When Harrison repeated his regressions using only observations for the suburban "rings" he found that "the cumulative impact of education on nonwhite earnings is no greater in the suburbs than in the ghetto."[9]

These tests are inappropriate and as a result do not necessarily support Harrison's argument. Consider the following example. Suppose that the "universe" consists of people living either inside (i=1) or outside (i=2) the ghetto who have one of two possible educational attainments E_j (j=1,2). Let n_{ij} be the number of people living in area i with education level j calculated over both ghetto and nonghetto residents, then the usual empirical measure of the dollar "return" to education is $W_j - W_{j-1}$ or, in this case, $W_2 - W_1$.

Letting $\alpha_j = [n_{1j}/(n_{1j} + n_{2j})]$ denote the proportion of persons in education class j living in the ghetto, then

$$W_j = \alpha_j w_{1j} + (1-\alpha_j)w_{2j} \tag{1}$$

and

$$W_2 - W_1 = \alpha_2 w_{12} + (1-\alpha_2)w_{22} - \alpha_1 w_{11} - (1-\alpha_1)w_{21} \tag{2}$$

The dollar return to education calculated for ghetto residents alone is $w_{12}-w_{11}$; for nonghetto residents it is $w_{22}-w_{21}$. The hypothesis that selection effects cause estimated returns to education for ghetto residents to be biased downward relative to those estimated for the population as a whole implies that

$$W_2 - W_1 > w_{12} - w_{11} \tag{3}$$

Substituting expression (2) for the appropriate quantity alters inequality (3) to .

$$\frac{w_{22} - w_{12}}{w_{21} - w_{11}} > \frac{1 - \alpha_1}{1 - \alpha_2} \tag{4}$$

The left-hand side of (4) is the ratio of the nonghetto-ghetto earnings differential for education class 2 to the same differential for education class 1. The right-hand side is the ratio of the proportion of workers in education class 1 who live outside the ghetto to the same proportion for education class 2.

If selection bias is absent, the inequality should not hold or at least the difference in size should be small.

Harrison, on the other hand, interprets the selection hypothesis to imply that education returns outside the ghetto should exceed those within, i.e.,

$$w_{22} - w_{21} > w_{12} - w_{11} \qquad (5)$$

or

$$\frac{w_{22} - w_{12}}{w_{21} - w_{11}} > 1 \qquad (6)$$

But this is something quite different from the selection hypothesis as we have described it. Comparison of (6) and (4) indicates that if residence outside the ghetto is positively correlated with education, Harrison's test is too severe -- $(1-\alpha_1)/(1-\alpha_2)$ will be less than 1. Even if returns within residence classes are identical (a condition Harrison would consider a clear refutation of the selection hypothesis), returns estimated for the entire population will exceed those within either group if (a) the earnings of ghetto residents at each level of education are less than those of persons living outside the ghetto and (b) the likelihood that a worker will reside outside the ghetto increases with education.

II. An Investigation of the Selection Hypothesis

Ordinarily the appropriate procedure in a case such as this would be to replicate Harrison's regressions on the same data set employing the combined ghetto and nonghetto observations. These regressions could then be compared to Harrison's to assess the importance of the sample restriction he imposed for evaluating the relation between education and earnings. We have not done this. Our procedure differs from Harrison's in that we employ a different data set, we consider only measures of earnings, we use only observations for males, and we rely on two-way tabulations rather than regressions.

Our sample is the 1967 Survey of Economic Opportunity. The 1967 Survey is employed instead of the 1966 tape because it is generally thought to be of better quality.[10] Harrison used the 1966 sample because only in that year was information collected on training received by workers. This is an issue which does not concern us here.

Our basic data restrictions are those used by Harrison. We have restricted our sample to residents of the twelve large S.M.S.A.'s identified on the SEO tape. We have eliminated from the sample all people still in school, self-employed, or the armed forces at the time of the survey. Since we are concerned primarily with those people who are substantially involved in the labor force, we have followed Harrison in including in the analysis of weekly earnings only those people reporting at least thirteen weeks in the labor force in 1966. All the earnings measures we report have been corrected for intercity variations in consumer prices.[11] Unlike Harrison, we utilize only observations for nonwhites.

While Harrison looks at determinants of weekly wages, unemployment rates, labor force participation, annual earnings, and socioeconomic status, we shall concentrate for simplicity only on weekly wages and earnings during all of 1966. Harrison states that he employed as a measure of weekly wage "individual weekly earnings in March 1966."[12] This variable is not in fact on the 1966 tape Harrison used, but a similar weekly earnings variable is available for 1967.[13] Even though available, a measure of weekly wage in March (the SEO survey month) can be misleading as an indicator of average weekly wages earned while working through the rest of the year because of seasonal variation and other reasons.

Construction and cannery workers, for example, are less likely to be working in March than at other times. We have chosen instead to measure weekly wage for our work by the quotient of reported annual earnings divided by weeks spent working.[14]

In addition to using the weekly wage for the men in our sample we report some calculations below using annual earnings for those workers in the labor force for forty weeks or more. A full scale analysis of the sources of interracial earnings differentials calls for investigation also of the determinants of unemployment rates and labor force participation. This is beyond the scope of this paper. The annual earnings measure should reflect some unemployment effects, and less-than-fulltime labor force participation is not common among the men in our sample. Ninety-one percent of the men satisfying the other restrictions mentioned above were in the labor force for at least forty weeks, and it is this group for which annual earnings are reported.

We have chosen to analyze earnings by years of experience rather than age (as used by Harrison) because of the now substantial theoretical and empirical evidence that experience is the more appropriate variable.[15] Due to lack of a better alternative, we have followed Hanoch (1967) and measured experience as the difference between age at the time of the sample and an estimate of the age of the worker upon completion of school.[16] While probably not too far off for men, this procedure is likely to produce substantial errors in predicting the actual labor force experience of women. There is some evidence that proper accounting for experience makes significant difference in empirical analysis of the earnings of female workers.[17] Because of uncertainty about the reliability of our experience measure for female workers, we utilize below only observations for males. Inclusion of female workers is not essential to the illustration of our point.

The tabulations for weekly wage and annual earnings are presented in Tables 1 and 2. We report averages for only the education range 9-16+ years and experience range 0-20 years. These intervals seem the most important for policy.[18] The "differences" cited in the table are the return to education holding experience constant. The $28 cited in the o-4 years experience/12 years education cell is the difference between mean earnings for this experience group with 12 years education and mean earnings for workers with the same experience but 9-11 years of education.[19]

Our hypothesis is that restriction of analysis to ghetto residents leads to estimates of the "return" to education for nonwhites which are less than would be produced when residents of all parts of the central city are considered. (See equation (3)) If the thesis is correct, the differences (returns) should be greater when data on all central city residents are utilized in calculation of earnings averages than when ghetto residents only are considered. For only two cases in both the weekly wage tabulation (Table 1) and the annual earnings computation (Table 2) do the estimated "returns" to education fall when central city residents (instead of only ghetto residents) are considered.

A rigorous statistical test of the hypothesis cannot be formulated because the distribution of the difference between the estimated "returns" to education in the ghetto and central city samples is unknown.[20] However, under the null hypothesis that returns to education are the same inside and outside the ghetto, a series of samples should produce estimates of returns for central city residents which are higher than estimated returns to ghetto residents only about half the time. The odds against drawing a difference favoring the ghetto two time out of twelve "tries" given the null hypothesis are more than 50 to 1.[21]

Weekly Wage
Nonwhite Men

Experience Class (Years)		Education Class (Years) 9-11 Ghetto	9-11 C.C.	12 Ghetto	12 C.C.	13-15 Ghetto	13-15 C.C.	16+ Ghetto	16+ C.C.
0-4	Mean*	55	52	75	81	84	108	162	137
	Difference	-	-	19	28	9	27	78	29++
	Standard Error**	3.56	3.06	4.64	3.54	8.51	5.64	15.07	10.13
	Observations	103	144	89	143	32	64	3	20
5-9	Mean	94	95	102	113	149	143	161	196
	Difference	-	-	8	18	47	30++	12	53
	Standard Error	5.18	3.69	4.06	2.86	22.64	9.18	27.37	13.37
	Observations	74	101	68	110	7	29	6	16
10-14	Mean	108	103	115	112	135	141	143	167
	Difference	-	-	7	9	19	29	8	26
	Standard Error	5.33	4.09	4.84	3.61	12.00	8.60	6.52	11.45
	Observations	68	96	60	118	12	29	10	21
15-19	Mean	107	107	115	119	126	143	136	170
	Difference	-	-	8	12	11	24	10	26
	Standard Error	5.04	4.62	8.37	4.84	10.87	6.41	27.84	13.95
	Observations	60	81	33	67	11	36	4	21

Source: Tabulations by authors from 1967 Survey of Economic Opportunity
* Weighted to account for variations in sampling probability
** Standard error of mean, adjusted for variations in sampling probability
+ Underscored differences are significantly greater than zero at the 5% confidence level.
++ Size of difference relative to that computed using ghetto sample is inconsistent with hypothesis. See text.

TABLE 2

Annual Earnings
Nonwhite Men

Experience Class (Years)		Education Class (Years)							
		9-11		12		13-15		16+	
		Ghetto	C.C.	Ghetto	C.C.	Ghetto	C.C.	Ghetto	C.C.
0-4	Mean*	2183	2196	3778	392[illegible]	4100	5289	5839	6533
	Difference	-	-	1595	1732	321	1361	1739	1244++
	Standard Error**	196.03	174.11	238.98	184.38	433.28	351.41	2161.40	564.03
	Observations	75	101	65	107	25	51	3	16
5-9	Mean	3889	4202	4855	5357	5775	7012	6317	9028
	Difference	-	-	965	1155	921	1655	542	2016
	Standard Error	239.51	197.33	236.43	182.41	1445.76	530.71	2079.86	983.60
	Observations	72	99	68	109	9	30	6	15
10-14	Mean	4379	4602	5387	5446	5643	6310	7299	8506
	Difference	-	-	1008	844++	256	864	1657	2196
	Standard Error	248.49	207.65	234.47	188.87	633.80	537.91	332.60	587.79
	Observations	71	99	55	112	12	29	10	21
15-19	Mean	4572	4712	5512	5709	5760	7078	5567	8233
	Difference	-	-	940	996	248	1370	-193	1155
	Standard Error	272.68	251.83	332.54	245.86	764.40	382.44	1769.01	795.21
	Observations	60	82	31	67	12	37	5	22

Source: Tabulations by authors from 1967 Survey of Economic Opportunity. Restricted to men in the labor force 40 weeks or more.

* Weighted to account for variations in sampling probability

** Standard error of mean, adjusted for variations in sampling probability

+ Underscored differences are significantly greater than zero at the 5% confidence level.

These data provide some information on the correlation between education and residence. In table 3 we report results of calculations from our SEO sample of the proportion of central city male residents living in the ghetto for each education class. The decline of ghetto residency as education increases is substantial. It is this correlation that we have argued renders Harrison's tests of the selection hypothesis inadequate.

Table 3

Residence of Sample

	Estimated Total Males Meeting Sample Restriction: Living in "Ghetto"	Living in Central City	Proportion in "Ghetto"
0-7	192,837	263,990	.73
8	101,598	158,691	.64
9-11	231,789	400,102	.58
12	170,750	371,681	.45
13-15	36,439	145,853	.25
16+	22,820	79,044	.29
Overall	756,235	1,419,361	.53

Source: Tabulations by the authors from the 1967 Survey of Economic Opportunity.

III. Conclusions

These results suggest that researchers utilizing data sources like the Census Employment Surveys do so at some risk. Our calculations of the impact of sample restriction on estimates of the return to education are hardly definitive, however, and a caveat is in order.

The "selection hypothesis" is fundamentally dynamic. It suggests something about changes in residence over the lifetime of persons educated in central city low-income areas. Our results, however, were obtained using cross-section data. It is possible that none of the nonghetto dwellers in our sample were educated in poverty areas and that detailed research would verify Harrison's contention that few people, successful or not, leave the ghetto. The selection effect may itself rest on omitted variables rather than migration. Our results are fully consistent with any of the following "omitted variables" hypotheses: (a) people living outside the ghetto have greater ability than those living within, (b) people living outside the ghetto have greater access to jobs than those living within, (c) people living outside the ghetto have access to better schools, etc. Rejection of the alternatives awaits availability of longitudinal data with relatively detailed information on worker history, location of residence, and location of work.

It is unfortunate that the sampling bias problem exists. The labor force participation, earnings, unemployment, and training data in the 1970 census are inadequate for most serious research. The data in the census employment surveys are much better. Cost probably prohibits collection of information with as much detail at a comparable sampling rate on a national basis. However, in the future it would be possible for the census bureau to sacrifice coverage in some cities for complete metropolitan ooverage in others. We would, for example, be happy to give up the survey of poverty areas in Akron, Ohio, for a more comprehensive survey in Houston. Intensive coverage of poverty areas could in these surveys be retained if desirable by making the sampling rate higher in such areas than in others.

Despite their shortcomings, the census employment surveys are hardly useless. They provide the best picture available of employment problems of residents of poverty areas. Far more information is collected in these surveys than is produced by the census. While in many cases inadequate for the evaluation of policy, these data are essential to its formulation.

A good example is provided by public service employment. Fighting poverty by providing people with jobs in the public sector has a long history and sizable political support. Unfortunately, the capacity of cities to provide jobs and the number of slots the Federal government is willing to fund both fall short of the number of potential applicants for such employment under reasonable assumptions about program characteristics.[22] Since it is likely that the lion's share of the target group for public employment programs resides in the areas identified by the Census Employment Surveys, these data can be employed to assess applicant pools under various program designs and the degree to which program characteristics must vary across cities to account for intercity variation in labor market and worker characteristics.

Footnotes

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[1] For a description see U.S. Bureau of the Census (1972b).

[2] U.S. Bureau of the Census (1972b), vi.

[3] See Harrison (1972a and 1972b).

[4] The description which follows is taken from the SEO codebook and related documentation (U.S. Office of Economic Opportunity [1967] and [1968]).

[5] All this may seem a bit pedantic, but misunderstanding of the basic sample design of this data source is widespread. For example, Welch, in a recent article reporting evidence of the earnings-education relationship derived from the SEO, states: "The SEO increased the percentage of blacks by adding . . . a companion sample including about 20,000 persons from 'poverty' areas. It is unfortunate that stratification was based upon an income correlate." (1973, p. 894) Here Welch is referring to the criteria by which poverty areas were designated, not areas necessarily selected for the supplementation.

[6] We have drawn both the "nonwhite area" and the "poor area" as unified subareas of the central cities. This may not be the case.

[7] See Harrison (1970), Chapter 2. "Poverty areas" are drawn only in central cities, because the SEO only identifies them explicitly in this case. There are, of course, poverty areas in the suburbs too. See U.S. National Advisory Commission (1968), 408-409.

[8] Harrison (1972a), p. 113.

[9] Ibid., p. 114.

[10] Much more extensive "cleaning" was conducted on the 1967 data set than was the case for the 1966 sample. See Office of Economic Opportunity (1968).

[11] For this purpose we employed the B.L.S.'s city index of consumer prices for low-income families. See U.S. Bureau of Labor Statistics (1967).

[12] Harrison (1972b), p. 803.

[13] It is not clear (at this writing) what variable actually ended up as Harrison's weekly wage measure. In correspondence, Harrison says that the variable may have been earnings in 1965 divided by weeks worked in the year. If this is so, the variable is the same as we employ later.

[14] There are problems with this measure also. "Weeks worked" is reported in the SEO only categories of 1-13, 14-26, 27-39, 40-47, 48-49, and 50-52 weeks. The midpoints of the intervals were employed to convert this back to a "continuous" variable. This obviously introduces error into the measure for people who worked less than a full year.

[15] Mincer (1974), p. 47.

[16] Following Hanoch and Welch we have assumed the following ages of entry into the labor market:

Years of school completed	0-7	8	9-11	12	13-15	16+
Age of first year out of school	14	16	18	20	23	26

"Experience" is assumed to equal the current age of the worker less his estimated age at leaving school.

[17] Harrison included both men and women in his regressions and accounted for differences in labor market experience between the sexes with a dummy variable. The implicit assumption is that sex does not affect the marginal impact of either education or experience of workers on earnings. A casual examination of census data on the relationship between

earnings and education indicates that sex differences in the payoff to education are pronounced (U.S. Bureau of the Census [1972a], 25). We have decided to avoid this problem by looking only at men.

[18] All summary statistics are appropriately weighted to reflect variations among individuals in the likelihood of inclusion in the survey. A complete set of these tabulations is available on request from the authors.

[19] The reported significance levels for the estimated returns to education are only approximate. We have not in these calculations assumed that the within-cell variance of earnings is equal across education and experience categories--the hypothesis that it is resoundingly rejected when Bartlett's test is applied (see Brownlee [1965], pp. 290-293). Where the sample sizes are small the degree of freedom utilized in the t-tests were adjusted using the procedure suggested by Wilks (see Scheffe [1970]). Bartlett's test is sensitive to nonnormality; it is possible that a transformation of earnings rather than the linear form we have used might have made Harrison's assumption of uniformity of error variance more tenable.

[20] Recall that the ghetto sample is wholly contained in the central city sample and there are no reasonable grounds for assuming the variance of earnings within the ghetto is equal to that outside of it for people with similar education and experience.

[21] When the forty-week labor force participation restriction is removed and the annual earnings of all men satisfying the basic sample restriction criteria are considered, these conclusions are not altered.

[22] See Levy and Wiseman (1975).

Bibliography

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Michael Wiseman and Frederick Doolittle

Brownlee, K.A. (1965). Statistical Theory and Methodology. New York: John Wiley and Sons, Inc.

Hanoch, Gloria (1967). "An Economic Analysis of Earnings and Schooling," Journal of Human Resources, 2 (Summer), 310-329.

Harrison, Bennett (1970). Education, Training, and the Urban Ghetto. Unpublished Ph.D. Dissertation, The University of Pennsylvania.

__________(1972a). Education, Training, and the Urban Ghetto. Baltimore: Johns Hopkins University Press.

__________(1972b). "Education and Underemployment in the Urban Ghetto," American Economic Review, 62(5) (December), 796-812.

Levy, Frank, and Wiseman, Michael (1975). "Public Service Employment: Some Demand and Supply Considerations," Public Policy, forthcoming.

Mincer, Jacob (1974). Schooling, Experience, and Earnings. New York: National Bureau of Economic Research.

Mincer Jacob, and Polachek, Solomon (1974). "Family Investments in Human Capital: Earnings of Women," Journal of Political Economy, 82(2, Part II), S76-S108.

Scheffé, H. (1970). "Practical Solutions of the Bekrens-Fisher Problem," Journal of the American Statistical Association, 65 (December, 1970), 1501-1508.

Thurow, Lester C., and Lucas, Robert E. B. (1972). The American Distribution of Income: A Structural Problem. Washington: U.S.G.P.O.

U.S. Bureau of the Census (1972a). The Social and Economic Status of the Black Population in the United States, 1972. Current Population Reports, Series P-23, No. 46. Washington: U.S.G.P.O.

__________(1972b). Employment Profiles of Selected Low-Income Areas, Final Report PHC(3)-23. Washington: U.S.G.P.O.

U.S. Bureau of Labor Statistics (1967). "The Standards of Living for an Urban Family of Four Persons: Spring, 1967." Bulletin, 1570-5.

U.S. National Advisory Commission on Civil Disorders. Report of the National Advisory Commission on Civil Disorders. New York: Bantam Books, 1968.

U.S. Office of Economic Opportunity (1967). 1967 Survey of Economic Activity Codebook, mimeo.

__________ (1968). Guide to the Documentation and Data Files of the 1966 and 1967 Survey of Economic Opportunity, mimeo.

Welch, Finis (1973). "Black-White Differences in Returns to Schooling," American Economic Review, 63(5) (December), 893-907.